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Contamination Analysis Report for Environmental Contamination Survey of the Longhorn Army Ammunition Plant, Mashall, Texas

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Prepared For

Thiokol Corporation/Longhorn Division
Marshall, Texas

For Submission To

U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Grounds, MD 21010

Best Available Copy

Prepared By

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20070419608

Submitted

March 14, 1983
Revised May 3, 1984

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1. Introduction

The main purpose of this interim report is the transference of analytical data to Thiokol Corporation and the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) to allow for in-process review and focusing of the remaining geotechnical and analytical effort on those areas found to be of continued concern.

At the outset of this project, nine sites within Longhorn Army Ammunition Plant were designated as potential areas of concern. These areas have been investigated geotechnically and analytically through the logging of existing soil conditions, as well as the sampling of groundwaters, surface waters, sediments, and soils at each of the study areas. The technical results associated with the geotechnical investigation have been submitted under separate cover in November 1982 as Interim Technical Report No. 1. This document contains the analytical data and field sampling methodology used for this survey.

The following sections of this interim report will rely heavily on other documents previously prepared by Environmental Protection Systems, Inc. (EPS) and already submitted to Thiokol and USATHAMA.

2. Sampling and Analysis

A. Sampling Methods

Sampling methods used during this study are presented in detail in Appendix G of this document. The manual which constitutes appendix G was issued to all field personnel, and the field sampling protocol established in this manual was strictly adhered to. Of notable exception to the methods prescribed in our field sampling protocol manual would be the method used by EPS to collect soil samples. Due to site-specific field conditions encountered during the survey, soil samples were routinely collected from each study area with a very narrow, long-nosed shovel. Specifically, a hole 1 foot deep was dug, and then a slice

approximately 5 inches wide and 1 inch thick was removed from the side of the hole using the shovel.

All other sampling procedures outlined in Appendix G were strictly adhered to. EPS collected all water and sediment samples during a one-week period from November 16-21, 1982. Ninety-seven percent of all samples collected at LHAAP were collected in a three-day period from November 17-20, 1982.

B. Parameters and Analytical Methods

A list of all parameters for which EPS was certified for the Longhorn AAP Contamination Survey is presented as Table 1A in Appendix G.

Prior to the inititiation of all sampling, EPS underwent a rigorous certification process which was administered by USATHAMA. Before the first samples were collected at LHAAP, EPS achieved certification for the parameters listed in table 1A in Appendix G and all matrices to be tested. Table I provides a list of all paramaters for which EPS was specifically certified for this survey, and the associated assigned method numbers and detection limits.

A detailed description of each of the analytical procedures used during this survey can be found in EPS's quality assurance document previously submitted to Thiokol and USATHAMA.

3. Quality Control

A detailed description of the quality control plan established for the Longhorn Army Ammunition Plant Contamination Survey is presented in EPS's quality assurance document. All data generated during this survey, unless otherwise noted, met the rigid analytical requirements presented in EPS's quality assurance document. A data summary sheet for each batch of samples (water, soil, and sediment) and analytes which did not meet quality control requirements, including the rationale used by the

Table I

LONGHORN AAP
EPS CERTIFIED METHODS

Analyte	Test Name	Matrix	Cert Level	Method Number	Tested Range	Detection Limit
Mercury	HG	WA	QN	1D	0.5-10 ugl	1.3 ugl
Copper	CU	WA	QN	1M	10-200 ugl	23.9 ugl
Zinc	ZN	WA	QN	1M	10-200 ugl	27.1 ugl
Beryllium	BE	WA	SQ	1M	10-200 ugl	10 ugl
Nickel	NI	WA	SQ	1M	10-200 ugl	30 ugl
Silver	AG	WA	SQ	1M	10-200 ugl	10 ugl
Manganese	MN	WA	QN	1M	10-200 ugl	12.1 ugl
Strontium	SR	WA	QN	1M	25-500 ugl	25 ugl
Aluminum	AL	WA	QN	1M	10-200 ugl	10 ugl
Thallium	TL	WA	SQ	1M	50-1000 ugl	50 ugl
Lead	PB	WA	QN	1B	5-100 ugl	7.49 ugl
Chromium	CR	WA	QN	1B	5-100 ugl	6.64 ugl
Cadmium	CD	WA	QN	1B	0.25-5 ugl	0.28 ugl
Antimony	SB	WA	QN	1B	10-200 ugl	10.2 ugl
Arsenic	AS	WA	SQ	1B	5-100 ugl	6 ugl
Barium	BA	WA	QN	1B	10-200 ugl	11.4 ugl
Selenium	SE	WA	SQ	1B	5-100 ugl	6 ugl
Mercury	HG	SO	QN	2D	0.5-10 ugg	2.7 ugg
Chromium	CR	SO	QN	1N	0.5-10 ugg	0.6 ugg
Cadmium	CD	SO	QN	1N	0.5-10 ugg	0.5 ugg
Copper	CU	SO	QN	1N	0.5-10 ugg	0.5 ugg
Zinc	ZN	SO	QN	1N	0.5-10 ugg	0.5 ugg
Beryllium	BE	SO	SQ	1N	0.5-10 ugg	0.5 ugg

Analyte	Test Name	Matrix	Cert Level	Method Number	Tested Range	Detection Limit
Nickel	NI	SO	SQ	1N	0.5-10 ugg	0.5 ugg
Silver	AG	SO	SQ	1N	0.5-10 ugg	0.5 ugg
Manganese	MN	SO	QN	1N	0.25-5 ugg	0.25 ugg
Aluminum	AL	SO	QN	1N	0.25-5 ugg	0.36 ugg
Strontium	SR	SO	QN	1N	0.5-10 ugg	0.5 ugg
Thallium	TL	SO	SQ	1N	2.5-50 ugg	3 ugg
Lead	PB	SO	QN	1J	0.5-10 ugg	0.89 ugg
Arsenic	AS	SO	SQ	1J	0.25-10 ugg	0.3 ugg
Barium	BA	SO	QN	1J	0.5-10 ugg	0.99 ugg
Antimony	SB	SO	QN	1J	0.5-10 ugg	0.76 ugg
Selenium	SE	SO	SQ	1J	0.5-10 ugg	0.5 ugg
Nitrate	NO3	WA	QN	2P	500-10000 ugl	500 ugl
Nitrite	NO2	WA	QN	2P	250-5000 ugl	250 ugl
Phosphate	PO4	WA	QN	2P	125-2500 ugl	125 ugl
Sulfate	SO4	WA	QN	2P	500-10000 ugl	580 ugl
Chloride	CL	WA	SQ	2P	500-10000 ugl	500 ugl
Fluoride	F	WA	SQ	2P	500-10000 ugl	500 ugl
Chromate	CRO4	WA	SQ	2P	500-10000 ugl	500 ugl
Thiocyanate	SCN	WA	SQ	2P	500-10000 ugl	500 ugl
Cyanide	CYN	WA	SQ	2P	500-10000 ugl	600 ugl
Nitrate	NO3	SO	SQ	7U	5-100 ugg	5 ugg
Nitrite	NO2	SO	QN	7U	5-100 ugg	5 ugg
Sulfate	SO4	SO	QN	7U	25-500 ugg	25 ugg
Chloride	CL	SO	SQ	7U	5-100 ugg	7 ugg
Fluoride	F	SO	SQ	7U	5-100 ugg	5 ugg
Chromate	CRO4	SO	SQ	7U	5-100 ugg	5 ugg

Analyte	Test Name	Matrix	Cert Level	Method Number	Tested Range	Detection Limit
Thiocyanate	SCN	SO	SQ	7U	5-100 ugg	10 ugg
Cyanide	CYN	SO	SQ	7U	5-100 ugg	5 ugg
1,3-Dinitro-benzene	13DNB	WA	QN	7V	0.5-10 ugl	1.68 ugl
2,4,6-Trini-toluene	246TNT	WA	QN	7V	0.5-10 ugl	1.46 ugl
1,3,5-Trini-trobenzene	135TNB	WA	QN	7V	0.5-10 ugl	1.08 ugl
2,4-Dinitrotoluene	24DNT	WA	QN	7V	0.5-10 ugl	0.89 ugl
2,6-Dinitro-toluene	26DNT	WA	QN	7V	0.5-10 ugl	1.20 ugl
Nitrobenzene	NB	WA	QN	7V	0.5-10 ugl	0.76 ugl
1,3-Dinitro-benzene	13DNB	SO	QN	7W	0.5-10 ugg	0.75 ugg
2,4,6-Trini-trotoluene	246TNT	SO	QN	7W	0.5-10 ugg	0.73 ugg
1,3,5-Trini-trobenzene	135TNB	SO	QN	7W	0.5-10 ugg	0.71 ugg
2,4-Dinitro-toluene	24DNT	SO	QN	7W	0.5-10 ugg	0.5 ugg
2,6-Dinitro-toluene	26DNT	SO	QN	7W	0.5-10 ugg	0.61 ugg
Nitrobenzene	NB	SO	QN	7W	0.5-10 ugg	1.15 ugg
p,p-DDT	PPDDT	WA	SQ	2F	0.05-1 ugl	0.05 ugl
Dieldrin	DLDRN	WA	SQ	2F	0.05-1 ugl	0.09 ugl
ABHC	ABHC	WA	SQ	2F	0.05-1 ugl	0.09 ugl
Heptachlor	HPCL	WA	SQ	2F	0.05-1 ugl	0.05 ugl
Lindane	LIN	WA	SQ	2F	0.05-1 ugl	0.09 ugl
Toxaphene	TXPHEN	WA	SQ	2F	2.5-50 ugl	4 ugl
PCB 1016	PCB016	WA	SQ	2F	0.52-11 ugl	0.6 ugl
PCB 1260	PCB260	WA	SQ	2F	0.52-11 ugl	1 ugl

Analyte	Test Name	Matrix	Cert Level	Method Number	Tested Range	Detection Limit
p,p'-DDT	PPDDT	SO	SQ	6V	0.05-1 ugg	0.09 ugl
Dieldrin	DLDRN	SO	SQ	6V	0.05-1 ugg	0.05 ugg
ABHC	ABHC	SO	SQ	6V	0.05-1 ugg	0.05 ugg
Heptachlor	HPCL	SO	SQ	6V	0.05-1 ugg	0.05 ugg
Lindane	LIN	SO	SQ	6V	0.05-1 ugg	0.05 ugg
Toxaphene	TXPHEN	SO	SQ	6V	2.5-50 ugg	4 ugg
PCB 1016	PCB016	SO	SQ	6V	0.52-11 ugg	0.6 ugg
PCB 1260	PCB260	SO	SQ	6V	0.52-11 ugg	0.7 ugg
Benzene	C6H6	WA	SQ	2J	0.5-10.4 ugl	1 ugl
Chloroform	CHCL3	WA	SQ	2J	0.5-10 ugl	1 ugl
Trichloro-ethene	TRCLE	WA	SQ	2J	0.5-10.4 ugl	1 ugl
Trichloro-fluoromethane	CCL3F	WA	SQ	2J	0.5-10 ugl	2 ugl
Pentachloro-phenol	PCP	WA	SQ	1X	0.43-22.4 ugl	2 ugl
2-Chlorophenol	2CLP	WA	SQ	1X	0.46-20.6 ugl	0.7 ugl
2,4-Dichloro-phenol	24DCLP	WA	SQ	1X	0.46-22.2 ugl	1 ugl
2-Fluorophenol	2FP	WA	SQ	1X	1.02-20.4 ugl	6 ugl
Pentafluoro-phenol	PFP	WA	SQ	1X	1.15-23 ugl	4 ugl
Phenol-D6	PHEND6	WA	SQ	1X	1.07-21.4 ugl	2 ugl
Di-N-Butyl-phthalate	DNBP	WA	SQ	1Z	0.502-20.4 ugl	2 ugl
Diethylphthalate	DEP	WA	SQ	1Z	0.53-20.4 ugl	2 ugl
Nitrobenzene	NB	WA	SQ	1Z	0.49-20.2 ugl	1 ugl
1-Fluoro-naphthalene	1FNAP	WA	SQ	1Z	1.07-21.4 ugl	2 ugl

Analyte	Test Name	Matrix	Cert Level	Method Number	Tested Range	Detection Limit
2-FluoroBiphenyl	2FBP	WA	SQ	1Z	1.09-21.8 ugl	2 ugl
Pentachloro-phenol	PCP	SO	SQ	1Y	0.43-11.2 ugg	1 ugg
2-Chlorophenol	2CLP	SO	SQ	1Y	0.46-10.3 ugg	0.7 ugg
2,4-Dichloro-phenol	24DLCP	SO	SQ	1Y	0.45-11.1 ugg	1 ugg
2-Fluorophenol	2FP	SO	SQ	1Y	0.51-10.7 ugg	3 ugg
Pentafluoro-phenol	PFP	SO	SQ	1Y	0.575-11.5 ugg	3 ugg
Phenol-D6	PHEND6	SO	SQ	1Y	0.535-10.7 ugg	3 ugg
Di-N-Butyl-phthalate	DNBP	SO	SQ	2A	0.51-10.4 ugg	0.7 ugg
Diethyl-phthalate	DEP	SO	SQ	2A	0.51-10.6 ugg	1 ugg
Nitrobenzene	NB	SO	SQ	2A	0.49-10.1 ugg	0.6 ugg
1-Fluoro-naphthalene	1FNAP	SO	SQ	2A	0.535-10.7 ugg	2 ugg
2-Fluorobi-phenyl	2FBP	SO	SQ	2A	1.09-21.8 ugg	2 ugg

FQAC to override the system, is presented in Appendix E. All results generated during the analytical portion of the survey for explosives, anions, GC/MS, and GC/EC parameters met the quality control requirements established in EPS's quality control program.

However, considerable problems were encountered in the analysis of metals in natural samples of water and soil collected at LHAAP. All water samples collected during the survey were analyzed in four groups of 17 batches each, or 68 discrete batches (AAX through ADM). The quality control for each batch included a duplicate and two spikes at different levels. the duplicates analyzed for all four batches of water samples had at least 2 of the 17 parameters being tested out of specifications with respect to precision. Most, if not all, of these problems were caused by the high concentration of a particular element encountered in natural samples, along with the resulting impact of numerous dilutions on the analytical scheme. The quality control for the spikes indicated several conditions under which our analytical process would be considered out of control; however, upon closer examination, it was determined that these problems occurred with the parameters for which EPS was certified semiquantitatively. The body of data which was used in the preparation of the quality control charts was rather limited for these parameters, and after review by the field quality control coordinator, it was determined that a re-calculation of the existing tables was in order. Accordingly, results for all spikes for batches presented in this report for atomic absorption water samples fell within reasonable and expected quality control ranges.

All soil and sediment samples collected at LHAAP were analyzed by EPS in three groups of 17 batches each, or 51 discrete batches (AEU through AGS). Here, too, results for several parameters in certain batches were found to be outside of the pre-established quality control limits set for this project. On closer analysis it was found that these quality control anomalies were all associated with high background levels in the blanks and spiked matrices, and the associated need for several dilutions, as well as, for many of the semiquantitative analytical parameters, an

unrealistic accuracy target range based on limited analytical data generated during the quality assurance certification.

4. Analytical Results

A. Data Reports

All analytical results generated during this survey are presented in Appendices A, B, C, D, and F. Appendix A contains all analytical results generated for goundwater sampling sites. Appendix B contains analytical results for samples collected at all surface water sites. Appendix C contains all analytical results for sediment sampling sites. Appendix D contains analytical results for samples collected at soil sampling sites. Appendix F contains results for all compounds isolated during the screening analyses (HPLC, GC/EC, and GC/MS) which have either been identified, or are being reported as unidentified compounds at this time. All results are presented by analytical category according to each station sample.

B. Detection Limits

The detection limits established for this project are presented in Table I. These detection limits were generated during the certification process which EPS underwent for both the Longhorn and Lone Star Army Ammunition Plants, and generally represent a composite detection limit for all analyses conducted by EPS for USATHAMA.

5. Preliminary Conclusions

Of the nine areas studied in-depth during this survey, only two have been demonstrated as having the potential for being a source of contamination which might conceivably migrate off-post.

The first area of continued concern is the TNT area. Wells 114 through 119 do not indicate the existence of any groundwater contamination in

this area. The geotechnical results to date indicate that this area has soils of relatively low permeablility, and, therefore, it is not surprising that, although soil contamination does exist at this site, the explosive contaminants present have not penetrated into the groundwater. Our analyses indicated relatively widespread and locally heavy contamination of sites within the TNT area for several of the explosive compounds tested.

Our sampling effort for this project took place during a period of very heavy rainfall. The rainfall (exact meteorological data will be presented in the final report) caused flash flooding in the small creeks and bayous which run through LHAAP just prior to the sampling of the surrounding surface waters associated with the TNT area. Even though the area was subjected to a tremendous flushing from the heavy rainfall, traces of 2,4,6-TNT (0.78 ug/l) were still found in surface water at Station SW006, as well as a relatively high level (206.90 ug/l) of 2,4,6-TNT. Also detected at this station were 2,4-DNT (23.40 ug/l) and 2,6-DNT (13.65 ug/l). Inasmuch as these concentrations of explosive compounds were detected at this site immediately downstream from the TNT area, and additionally considering that traces of 2,4,6-TNT (2.27 ug/l) and nitrobenzene (6.27 ug/l) were found at Station SW002, which is further downstream from the TNT area, this potential source of contamination warrants additional investigation.

During this survey one other site, which had been preliminarily identified as an area of concern, has been tentatively confirmed as a potential contamination source based on the analytical data presented. This area is the current and active burning grounds and associated rocket motor casing washout pond. Many of the wells surrounding the pond have high concentrations of several halogenated organic compounds.

Other sites within the initial nine general areas of concern have been determined to have localized low levels of contamination; however, data gathered to date would not support the imminent potential for migration off LHAAP.

6. Recommendations

A detailed review of the analytical and geotechnical data thus far produced for this survey is now in progress. However, some preliminary recommendations are evident from an initial review of the existing data. These recommendations pertain to those areas found to be of significant continuing concern with respect to their potential for having hazardous substances which might migrate off LHAAP.

1. It is recommended that, since major groundwater contamination was found in one area (active burning grounds), the majority of the additional geotechnical investigation be centered on the wells at the active burning grounds, with specific emphasis on those wells surrounding the rocket motor washout pond.

2. It is recommended that additional wells be installed in the wooded area between the rocket motor washout pond and the Harrison Bayou floodplain. This recommendation is based on the fact that many of the wells surrounding the pond were highly contaminated with halogenated organic compounds and that this contamination was not uniformly distributed from the apparent source of the contamination. The data indicates that there are major differences in the amount of contamination in wells that were equally distant from the apparant contamination source (rocket motor washout pond). Because of the fact that this area's soils have relatively higher permeability than other sites within LHAAP, and because the initial geotechnical report indicates that this area is probably underlain by discontinuous layers of material, it is very possible that the contamination from the rocket motor washout pond follows a very specific and localized pathway into the goundwater. The wells presently installed around the pond are too close to the pond for us to establish with any prescision the extent of groundwater contamination in this area. Since it is predicted that the general groundwater flow from this site is towards Harrison Bayou, we recommend that at least six to eight wells be established at

distances of approximately 300 feet and 500 feet from the northeastern and northwestern edges of the rocket motor washout pond.

3. It is recommended that additional water and sediment samples be collected along the entire length of the main drainage course leaving the TNT area at Stations SW001, SW002, and SW006. Additionally, another sampling station should be established in the drainage course leaving the TNT area just prior to its confluence with the north bayou inlet to Caddo Lake. It is suggested that additional samples be collected during a period of normal rainfall at all sediment sampling points. It is further suggested that water samples be collected at surface water Station SW006 every 30 minutes during a storm water hydrograph. Samples collected during the rising and falling hydrograph periods should be analyzed for the presence of explosive compounds. This additional data will be vital in determining whether or not the concentrations previously observed in the surface waters at these sites were an anomaly caused by the very heavy rains in the area, or simply a fraction of the concentrations normally found in the system prior to major flushing.

4. It is further recommended that tissue samples from bottom-feeding fishes in the area of the north bayou inlet to Caddo Lake be analyzed for the presence of explosive compounds and their degradation products.

5. It is suggested that several additional borings be made in area 080 (the suspected TNT burial site) for analysis of explosive compounds. Since traces of explosives were found in bottom soil from one bore hole in this area, and considering that the sampling at this site was totally random, it is suggested that additional historical information be gathered, if possible, and that more specific, and possibly deeper, bore holes be dug for analysis of sediment samples.

APPENDIX A

ANALYTICAL RESULTS FOR GROUNDWATER SAMPLING SITES

(WELL 101 - WELL 53)

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 101

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	3.35
2,4,6 - TNT	<
1,3,5 - TNB	15.00
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	1600.
Nitrite	<
Phosphates	<
Sulfate	35500.
Chloride	2000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	168.00
Antimony	<
Barium	279.00
Cadmium	<
Chromium	56.30
Lead	93.60
Manganese	452.00
Strontium	260.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	330.00
Arsenic	50.
Beryllium	<
Nickel	81.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutyiphthiate	<
Diethylphthiate	<
Nitrobenzene	<
Organics (GC/EC)	<
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	

< less than established detection limit.

* Analyte or category not tested as per project

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 102

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	5.74
2,4,6 - TNT	<
1,3,5 - TNB	53.95
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	4980.
Nitrite	<
Phosphates	<
Sulfate	9690.
Chloride	3000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	382.00
Antimony	<
Barium	365.00
Cadmium	0.56
Chromium	84.10
Lead	67.40
Manganese	476.00
Strontium	444.00
Mercury	<

ANALYTES	CON. ug/l
Copper	54.00
Zinc	270.00
Arsenic	160.
Beryllium	<
Nickel	220.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	<
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.(limited sample)

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 103

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	<
2,6 - DNT	<	Selenium	<
Anions:		Organics (GC/MS):	
Nitrate	0910.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	69920.	Pentachlorophenol	<
Chloride	41000.	O-chlorophenol	<
Fluoride	<	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	361.00	Organics (GC/EC)	<
Antimony	<	p.p'-DDT	<
Barium	32.00	Dieldrin	<
Cadmium	11.52	Alpha BHC	<
Chromium	13.50	Heptachlor	<
Lead	15.80	Lindane	<
Manganese	169.00	Toxaphene	<
Strontium	398.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 104

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	9.74
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	1.82
Anions:	
Nitrate	3500.
Nitrite	<
Phosphates	<
Sulfate	5710.
Chloride	8000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	372.00
Antimony	<
Barium	67.00
Cadmium	0.97
Chromium	45.70
Lead	34.30
Manganese	85.00
Strontium	96.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	21.
Beryllium	<
Nickel	57.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 105

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	24000.
Nitrite	<
Phosphates	<
Sulfate	1846600.
Chloride	820000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	377.00
Antimony	<
Barium	32.50
Cadmium	9.72
Chromium	11.90
Lead	<
Manganese	3340.00
Strontium	6920.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	137.
Selenium	<
Silver	<
Thallium	60.
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 106

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	4.38
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	73300.
Chloride	137000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	249.00
Antimony	<
Barium	13.30
Cadmium	3.92
Chromium	9.50
Lead	15.10
Manganese	652.00
Strontium	272.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	41.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 107

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	54650.
Chloride	145000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	154.00
Antimony	<
Barium	<
Cadmium	4.68
Chromium	10.30
Lead	10.00
Manganese	187.00
Strontium	260.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	<
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	1.
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 108

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	234.
2,6 - DNT	<	Selenium	19.
Nitrobenzene	<	Silver	<
		Thallium	80.
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	1378000.	Pentachlorophenol	<
Chloride	2734000.	O-chlorophenol	<
Fluoride	<	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	147.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	31.60	Dieldrin	<
Cadmium	15.38	Alpha BHC	1.
Chromium	12.90	Heptachlor	<
Lead	<	Lindane	<
Manganese	11800.00	Toxaphene	<
Strontium	8200.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 109

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	<
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	14000.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	66000.	Pentachlorophenol	<
Chloride	2037000.	O-chlorophenol	<
Fluoride	1000.	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	184.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	869.00	Dieldrin	*
Cadmium	6.78	Alpha BHC	*
Chromium	10.40	Heptachlor	*
Lead	<	Lindane	*
Manganese	15.00	Toxaphene	*
Strontium	80.00	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 110

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	64.
2,6 - DNT	<	Selenium	28.
Nitrobenzene	<	Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	2407100.	Pentachlorophenol	<
Chloride	1414000.	O-chlorophenol	<
Fluoride	<	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	180.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	32.00	Dieldrin	<
Cadmium	1.44	Alpha BHC	<
Chromium	10.00	Heptachlor	<
Lead	<	Lindane	<
Manganese	1570.00	Toxaphene	<
Strontium	3920.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 111

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	<
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	4350.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	54500.	Pentachlorophenol	<
Chloride	41000.	O-chlorophenol	<
Fluoride	<	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	172.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	15.60	Dieldrin	<
Cadmium	13.00	Alpha BHC	<
Chromium	7.00	Heptachlor	<
Lead	13.00	Lindane	<
Manganese	116.00	Toxaphene	<
Strontium	190.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 112

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	9.00
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	67500.
Nitrite	<
Phosphates	<
Sulfate	951000.
Chloride	820000.
Fluoride	2000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	247.00
Antimony	<
Barium	17.10
Cadmium	16.27
Chromium	10.10
Lead	<
Manganese	3300.00
Strontium	90.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	<
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutyiphthiate	<
Diethylphthiate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 113

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	*
2,4,6 - TNT	<	Arsenic	*
1,3,5 - TNB	<	Beryllium	*
2,4 - DNT	<	Nickel	*
2,6 - DNT	<	Selenium	*
Nitrobenzene	<	Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Benzene	*
Nitrite	*	Chloroform	*
Phosphates	*	Trichlorethylene	*
Sulfate	*	Pentachlorophenol	*
Chloride	*	O-chlorophenol	*
Fluoride	*	2,4-dichlorophenol	*
Chromate	*	Dibutylphthlate	*
Thiocyanate	*	Diethylphthlate	*
Cyanide	*	Nitrobenzene	*
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 114

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	*
2,4,6 - TNT	<	Arsenic	*
1,3,5 - TNB	<	Beryllium	*
2,4 - DNT	<	Nickel	*
2,6 - DNT	<	Selenium	*
Nitrobenzene	<	Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Benzene	*
Nitrite	*	Chloroform	*
Phosphates	*	Trichlorethylene	*
Sulfate	*	Pentachlorophenol	*
Chloride	*	O-chlorophenol	*
Fluoride	*	2,4-dichlorophenol	*
Chromate	*	Dibutylphthlate	*
Thiocyanate	*	Diethylphthlate	*
Cyanide	*	Nitrobenzene	*
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 115

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/l
Copper	<
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 116

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chioride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/l
Copper	<
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutyiphthiate	*
Diethylphthiate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 112

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	9.00
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	67500.
Nitrite	<
Phosphates	<
Sulfate	951000.
Chloride	820000.
Fluoride	2000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	247.00
Antimony	<
Barium	17.10
Cadmium	16.27
Chromium	10.10
Lead	<
Manganese	3300.00
Strontium	90.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	<
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 113

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*
Copper	<
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 114

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/l
Copper	<
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 115

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/l
Copper	<
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 116

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chioride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/l
Copper	<
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 117

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/l
Copper	<
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 118

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*
Copper	<
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 119

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	*
2,4,6 - TNT	<	Arsenic	*
1,3,5 - TNB	<	Beryllium	*
2,4 - DNT	<	Nickel	*
2,6 - DNT	<	Selenium	*
Nitrobenzene	<	Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Benzene	*
Nitrite	*	Chloroform	*
Phosphates	*	Trichlorethylene	*
Sulfate	*	Pentachlorophenol	*
Chloride	*	O-chlorophenol	*
Fluoride	*	2,4-dichlorophenol	*
Chromate	*	Dibutylphthlate	*
Thiocyanate	*	Diethylphthlate	*
Cyanide	*	Nitrobenzene	*
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 120

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	1170000.
Nitrite	<
Phosphates	<
Sulfate	122000.
Chloride	1375000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	192.00
Antimony	<
Barium	44.20
Cadmium	5.44
Chromium	10.20
Lead	<
Manganese	604.00
Strontium	412.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	64.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 121

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	<
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	*
Nitrite	<	Chloroform	*
Phosphates	<	Trichlorethylene	*
Sulfate	63700.	Pentachlorophenol	*
Chloride	82000.	O-chlorophenol	*
Fluoride	<	2,4-dichlorophenol	*
Chromate	<	Dibutylphthlate	*
Thiocyanate	<	Diethylphthlate	*
Cyanide	<	Nitrobenzene	*
Metals:			
Aluminum	215.00	Organics (GC/EC)	
Antimony	<	p,p'-DDT	<
Barium	75.10	Dieldrin	<
Cadmium	5.91	Alpha BHC	<
Chromium	27.70	Heptachlor	<
Lead	15.70	Lindane	<
Manganese	126.00	Toxaphene	<
Strontium	180.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL J22

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	<
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	122000.	Pentachlorophenol	<
Chloride	328000.	O-chlorophenol	<
Fluoride	1000.	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	352.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	217.00	Dieldrin	<
Cadmium	6.84	Alpha BHC	<
Chromium	8.70	Heptachlor	<
Lead	<	Lindane	<
Manganese	4460.00	Toxaphene	<
Strontium	1112.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLINC SITE
WELL 123

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	20500.
Nitrite	<
Phosphates	<
Sulfate	35600.
Chloride	24000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	161.00
Antimony	<
Barium	58.30
Cadmium	5.87
Chromium	40.0
Lead	<
Manganese	72.00
Strontium	72.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	44.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 124

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	7.31
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	1030.
Nitrite	<
Phosphates	<
Sulfate	4700.
Chloride	29000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	408.00
Antimony	<
Barium	169.00
Cadmium	7.77
Chromium	11.20
Lead	<
Manganese	83.00
Strontium	72.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	78.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 125

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	122.00
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	2.50	Beryllium	<
2,4 - DNT	<	Nickel	377.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	140.
Anions:		Organics (GC/MS):	
Nitrate	6570.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	4000.	Pentachlorophenol	<
Chloride	2345000.	O-chlorophenol	<
Fluoride	1000.	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	21.40	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	2210.00	Dieldrin	<
Cadmium	14.20	Alpha BHC	<
Chromium	10.50	Heptachlor	<
Lead	<	Lindane	<
Manganese	1340.00	Toxaphene	<
Strontium	7440.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 125

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	114.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	120.
Anions:		Organics (GC/MS):	
Nitrate	3200.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	4000.	Pentachlorophenol	<
Chloride	2725000.	O-chlorophenol	<
Fluoride	1000.	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	308.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	333.00	Dieldrin	<
Cadmium	3.54	Alpha BHC	<
Chromium	12.10	Heptachlor	<
Lead	<	Lindane	<
Manganese	1320.00	Toxaphene	<
Strontium	7760.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 127

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	157.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	140.
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	*
Nitrite	<	Chloroform	*
Phosphates	<	Trichlorethylene	*
Sulfate	1622000.	Pentachlorophenol	*
Chloride	832000.	O-chlorophenol	*
Fluoride	1000.	2,4-dichlorophenol	*
Chromate	<	Dibutylphthlate	*
Thiocyanate	<	Diethylphthlate	*
Cyanide	<	Nitrobenzene	*
Metals:			
Aluminum	36.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	46.00	Dieldrin	*
Cadmium	9.00	Alpha BHC	*
Chromium	11.60	Heptachlor	*
Lead	<	Lindane	*
Manganese	1860.00	Toxaphene	*
Strontium	3360.00	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 128

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	559000.
Chloride	1000000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	353.00
Antimony	<
Barium	51.50
Cadmium	4.69
Chromium	<
Lead	<
Manganese	1088.00
Strontium	4120.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	82.
Selenium	<
Silver	<
Thallium	110.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 129

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	99200.
Nitrite	<
Phosphates	<
Sulfate	13400.
Chloride	2592000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	272.00
Antimony	<
Barium	431.00
Cadmium	9.67
Chromium	11.40
Lead	<
Manganese	780.00
Strontium	1060.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	100.
Selenium	<
Silver	<
Thallium	130.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
[illegible]-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	73.
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 130

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	152000.
Chloride	2348000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	125.00
Antimony	<
Barium	105.00
Cadmium	2.22
Chromium	<
Lead	<
Manganese	<
Strontium	1160.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	91.
Selenium	<
Silver	<
Thallium	100.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 131

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	216600.
Chloride	27850000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	222.00
Antimony	<
Barium	47.00
Cadmium	0.93
Chromium	<
Lead	<
Manganese	<
Strontium	1340.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	52.
Selenium	<
Silver	<
Thallium	80.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	52.
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 132

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	337000.
Chloride	10330000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	232.00
Antimony	<
Barium	53.40
Cadmium	9.24
Chromium	14.50
Lead	16.30
Manganese	1448.00
Strontium	2640.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	102.
Selenium	<
Silver	<
Thallium	100.
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 33

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	59.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	90.
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	90500.	Pentachlorophenol	<
Chloride	227000.	O-chlorophenol	<
Fluoride	1000.	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	2.
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	132.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	49.70	Dieldrin	<
Cadmium	3.69	Alpha BHC	<
Chromium	2.10	Heptachlor	<
Lead	<	Lindane	<
Manganese	193.00	Toxaphene	<
Strontium	920.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 34

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	153400.
Chloride	2725000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	36.60
Antimony	<
Barium	20.20
Cadmium	1.26
Chromium	<
Lead	54.40
Manganese	16.00
Strontium	1160.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	62.
Selenium	<
Silver	<
Thallium	100.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONCHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 35

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	2.25
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	235000.
Chloride	200000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	29.80
Antimony	<
Barium	14.70
Cadmium	1.99
Chromium	<
Lead	44.00
Manganese	36.00
Strontium	960.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	71.
Selenium	<
Silver	<
Thallium	110.
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 36

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	165.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	160.
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	*
Nitrite	<	Chloroform	*
Phosphates	<	Trichlorethylene	*
Sulfate	67000.	Pentachlorophenol	*
Chloride	878000.	O-chlorophenol	*
Fluoride	1000.	2,4-dichlorophenol	*
Chromate	<	Dibutylphthiate	*
Thiocyanate	<	Diethylphthlate	*
Cyanide	<	Nitrobenzene	*
Metals:			
Aluminum	235.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	156.60	Dieldrin	<
Cadmium	0.91	Alpha BHC	<
Chromium	9.00	Heptachlor	<
Lead	<	Lindane	<
Manganese	360.00	Toxaphene	<
Strontium	2920.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 37

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	73.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	140.
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	67000.	Pentachlorophenol	<
Chloride	826000.	O-chlorophenol	<
Fluoride	2000.	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	227.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	95.50	Dieldrin	<
Cadmium	2.97	Alpha BHC	<
Chromium	7.60	Heptachlor	<
Lead	80.90	Lindane	<
Manganese	312.00	Toxaphene	<
Strontium	1560.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 38

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	74.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	140.
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	*
Nitrite	<	Chloroform	*
Phosphates	<	Trichlorethylene	*
Sulfate	6150.	Pentachlorophenol	*
Chloride	728000.	O-chlorophenol	*
Fluoride	1000.	2,4-dichlorophenol	*
Chromate	<	Dibutylphthlate	*
Thiocyanate	<	Diethylphthlate	*
Cyanide	<	Nitrobenzene	*
Metals:			
Aluminum	229.00	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	963.00	Dieldrin	*
Cadmium	6.81	Alpha BHC	*
Chromium	7.10	Heptachlor	*
Lead	8.80	Lindane	*
Manganese	596.00	Toxaphene	*
Strontium	1520.00	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 39

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	1327.00
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	1790.
Chloride	653000.
Fluoride	5000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	94.3
Antimony	<
Barium	797.00
Cadmium	3.70
Chromium	<
Lead	<
Manganese	196.00
Strontium	1220.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	60.
Selenium	<
Silver	<
Thallium	150.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 40

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	2230.
Nitrite	<
Phosphates	<
Sulfate	3300.
Chloride	264000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	50.9
Antimony	<
Barium	<
Cadmium	0.99
Chromium	11.70
Lead	9.30
Manganese	632.00
Strontium	1420.00
Mercury	<
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	<
Selenium	<
Silver	<
Thallium	50.
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 41

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	29.00
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	80.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	100.
Anions:		Organics (GC/MS):	
Nitrate	118100.	Benzene	*
Nitrite	<	Chloroform	*
Phosphates	<	Trichlorethylene	*
Sulfate	46480.	Pentachlorophenol	*
Chloride	711000.	O-chlorophenol	*
Fluoride	<	2,4-dichlorophenol	*
Chromate	<	Dibutylphthlate	*
Thiocyanate	<	Diethylphthlate	*
Cyanide	<	Nitrobenzene	*
Metals:			
Aluminum	30.50	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	615.00	Dieldrin	*
Cadmium	2.04	Alpha BHC	*
Chromium	8.90	Heptachlor	*
Lead	<	Lindane	*
Manganese	740.00	Toxaphene	*
Strontium	1820.00	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 42

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	7700.
Nitrite	<
Phosphates	<
Sulfate	4950.
Chloride	981000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	40.10
Antimony	<
Barium	624.00
Cadmium	4.22
Chromium	8.20
Lead	17.40
Manganese	460.00
Strontium	2240.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	38.
Selenium	<
Silver	<
Thallium	90.
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 43

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	720.
Nitrite	<
Phosphates	2460.
Sulfate	6880.
Chloride	1126000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	103.70
Antimony	<
Barium	609.00
Cadmium	7.20
Chromium	8.90
Lead	<
Manganese	660.00
Strontium	1240.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	39.
Selenium	<
Silver	<
Thallium	70.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	330.
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 44

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	44.00
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	85.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	80.
Anions:		Organics (GC/MS):	
Nitrate	22360.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	1390.	Pentachlorophenol	<
Chloride	702000.	O-chlorophenol	<
Fluoride	<	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	200.
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	19.00	Organics (CC/EC)	
Antimony	<	p.p'-DDT	*
Barium	32.50	Dieldrin	*
Cadmium	7.40	Alpha BHC	*
Chromium	<	Heptachlor	*
Lead	<	Lindane	*
Manganese	140.00	Toxaphene	*
Strontium	1320.00	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 45

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	41.00
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	40.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	70.
Anions:		Organics (GC/MS):	
Nitrate	16700.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	4470.	Pentachlorophenol	<
Chloride	545000.	O-chlorophenol	<
Fluoride	<	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	16.
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	112.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	18.40	Dieldrin	*
Cadmium	6.20	Alpha BHC	*
Chromium	9.60	Heptachlor	*
Lead	<	Lindane	*
Manganese	520.00	Toxaphene	*
Strontium	1700.00	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 46

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	4470.
Chloride	545000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	68.00
Antimony	<
Barium	534.00
Cadmium	0.87
Chromium	<
Lead	<
Manganese	204.00
Strontium	1592.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	<
Selenium	<
Silver	<
Thallium	80.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 47

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	1990.
Chloride	441000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	36.70
Antimony	<
Barium	539.00
Cadmium	<
Chromium	9.00
Lead	<
Manganese	694.00
Strontium	1080.00
Mercury	2.70

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	41.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	5.
Diethylphthlate	243.
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 48

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	29.47
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	106000.
Sulfate	2900.
Chloride	554000.
Fluoride	1000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	33.70
Antimony	<
Barium	648.00
Cadmium	<
Chromium	12.40
Lead	13.40
Manganese	576.00
Strontium	1500.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	55.
Selenium	<
Silver	<
Thallium	75.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	8.
Diethylphthlate	3.
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 49

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	9.59	Arsenic	<
1,3,5 - TNB	106.39	Beryllium	<
2,4 - DNT	<	Nickel	<
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	2900.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	2540.	Pentachlorophenol	<
Chloride	580000.	O-chlorophenol	<
Fluoride	1000.	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	98.50	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	86.00	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	<	Heptachlor	*
Lead	<	Lindane	*
Manganese	468.00	Toxaphene	*
Strontium	1246.00	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 50

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	5.37	Arsenic	<
1,3,5 - TNB	34.20	Beryllium	<
2,4 - DNT	<	Nickel	<
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	10910.	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	4270.	Pentachlorophenol	<
Chloride	580000.	O-chlorophenol	<
Fluoride	980.	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	520.00	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	66.70	Dieldrin	*
Cadmium	7.90	Alpha BHC	*
Chromium	9.80	Heptachlor	*
Lead	<	Lindane	*
Manganese	150.00	Toxaphene	*
Strontium	900.00	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 51

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	6.00
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	1230.
Nitrite	<
Phosphates	<
Sulfate	2110
Chloride	5000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	67.70
Antimony	<
Barium	42.40
Cadmium	<
Chromium	55.80
Lead	49.60
Manganese	151.00
Strontium	62.00
Mercury	3.20

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Peryllium	<
Nickel	40.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthiate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 52

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	700.
Nitrite	<
Phosphates	3930.
Sulfate	1340.
Chloride	1056000.
Fluoride	2000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	24.20
Antimony	<
Barium	60.50
Cadmium	<
Chromium	13.30
Lead	<
Manganese	127.00
Strontium	930.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	34.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	7.
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR GOUNDWATER SAMPLING SITE
WELL 53

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	1120.
Nitrite	<
Phosphates	1890.
Sulfate	8570.
Chloride	319000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	22.90
Antimony	<
Barium	<
Cadmium	3.20
Chromium	10.40
Lead	18.90
Manganese	1990.00
Strontium	1100.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Perylium	<
Nickel	<
Selenium	<
Silver	<
Thallium	70.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	6.
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.
* Analyte or category not tested as per project scope.

APPENDIX B

ANALYTICAL RESULTS FOR

SURFACEWATER SAMPLING SITES

(SW001 - SW021)

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 001

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	500.
Nitrite	<
Phosphates	<
Sulfate	7120.
Chloride	3000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	87.50
Antimony	<
Barium	14.70
Cadmium	<
Chromium	10.40
Lead	11.30
Manganese	43.00
Strontium	<
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	<
Selenium	<
Silver	<
Thallium	60.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	.06
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 006

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	*
1,3-DNB	<	Zinc	*
2,4,6 - TNT	206.90	Arsenic	*
1,3,5 - TNB	<	Beryllium	*
2,4 - DNT	22.40	Nickel	*
2,6 - DNT	13.65	Selenium	*
Nitrobenzene	<	Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Benzene	*
Nitrite	*	Chloroform	*
Phosphates	*	Trichlorethylene	*
Sulfate	*	Pentachlorophenol	*
Chloride	*	O-chlorophenol	*
Fluoride	*	2,4-dichlorophenol	*
Chromate	*	Dibutylphthlate	*
Thiocyanate	*	Diethylphthlate	*
Cyanide	*	Nitrobenzene	*
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 007

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	*
1,3-DNB	<	Zinc	*
2,4,6 - TNT	<	Arsenic	*
1,3,5 - TNB	<	Beryllium	*
2,4 - DNT	<	Nickel	*
2,6 - DNT	<	Selenium	*
Nitrobenzene	<	Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Benzene	*
Nitrite	*	Chloroform	*
Phosphates	*	Trichlorethylene	*
Sulfate	*	Pentachlorophenol	*
Chloride	*	O-chlorophenol	*
Fluoride	*	2,4-dichlorophenol	*
Chromate	*	Dibutylphthlate	*
Thiocyanate	*	Diethylphthlate	*
Cyanide	*	Nitrobenzene	*
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 008

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Phosphates	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 009

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	2000.
Nitrite	<
Phosphates	<
Sulfate	5100.
Chloride	8000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	235.00
Antimony	<
Barium	54.10
Cadmium	<
Chromium	<
Lead	<
Manganese	64.00
Strontium	160.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	32.00
Arsenic	<
Beryllium	<
Nickel	37.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	0.06
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 010

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	980.
Nitrite	<
Phosphates	<
Sulfate	11380.
Chloride	3000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	236.00
Antimony	<
Barium	30.00
Cadmium	<
Chromium	<
Lead	7.60
Manganese	28.00
Strontium	60.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	43.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 011

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	19000.
Chloride	9000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	252.00
Antimony	<
Barium	28.80
Cadmium	<
Chromium	<
Lead	11.10
Manganese	39.00
Strontium	66.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	41.00
Arsenic	<
Beryllium	<
Nickel	36.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p,p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 012

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	2075.
Chloride	8000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	240.00
Antimony	<
Barium	28.00
Cadmium	0.37
Chromium	<
Lead	10.20
Manganese	50.00
Strontium	70.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	44.00
Arsenic	<
Beryllium	<
Nickel	47.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p,p'-DDT	<
Dieldrin	<
Alpha BHC	0.1
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 013

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	1000.
Sulfate	17240.
Chloride	9000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	323.00
Antimony	<
Barium	24.00
Cadmium	<
Chromium	<
Lead	<
Manganese	85.00
Strontium	74.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	37.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 014

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	4.83
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	165500.
Nitrite	<
Phosphates	<
Sulfate	12960.
Chloride	14000.
Fluoride	66000.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	251.00
Antimony	<
Barium	1620.00
Cadmium	<
Chromium	<
Lead	8.80
Manganese	26.00
Strontium	14,400.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	57.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 015

ANALYTES	CON. ug/l	ANALYTES	CON. ug/l
Explosives:		Copper	<
1,3-DNB	<	Zinc	<
2,4,6 - TNT	<	Arsenic	<
1,3,5 - TNB	<	Beryllium	<
2,4 - DNT	<	Nickel	52.
2,6 - DNT	<	Selenium	<
Nitrobenzene	<	Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Benzene	<
Nitrite	<	Chloroform	<
Phosphates	<	Trichlorethylene	<
Sulfate	12860.	Pentachlorophenol	<
Chloride	14000.	O-chlorophenol	<
Fluoride	<	2,4-dichlorophenol	<
Chromate	<	Dibutylphthlate	<
Thiocyanate	<	Diethylphthlate	<
Cyanide	<	Nitrobenzene	<
Metals:			
Aluminum	126.00	Organics (GC/EC)	
Antimony	<	p,p'-DDT	<
Barium	750.00	Dieldrin	<
Cadmium	3.90	Alpha BHC	0.07
Chromium	7.30	Heptachlor	<
Lead	<	Lindane	<
Manganese	31.00	Toxaphene	<
Strontium	132.00	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 016

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	940.
Nitrite	<
Phosphates	<
Sulfate	10500.
Chloride	4000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	110.00
Antimony	<
Barium	<
Cadmium	<
Chromium	34.50
Lead	<
Manganese	33.00
Strontium	74.00
Mercury	1.60

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	58.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 017

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	8170.
Chloride	8000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	337.00
Antimony	<
Barium	<
Cadmium	<
Chromium	8.40
Lead	20.10
Manganese	49.00
Strontium	80.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	82.
Selenium	<
Silver	<
Thallium	40.
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p,p'-DDT	<
Dieldrin	<
Alpha BHC	0.05
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 018

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	680.
Nitrite	<
Phosphates	<
Sulfate	8460.
Chloride	8000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	407.00
Antimony	<
Barium	<
Cadmium	<
Chromium	10.50
Lead	23.90
Manganese	26.00
Strontium	100.00
Mercury	1.60

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	59.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 019

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	500.
Nitrite	<
Phosphates	<
Sulfate	6410.
Chloride	8000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	340.00
Antimony	<
Barium	<
Cadmium	<
Chromium	<
Lead	8.10
Manganese	36.00
Strontium	92.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	47.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 020

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	6410.
Chloride	8000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	226.00
Antimony	<
Barium	<
Cadmium	<
Chromium	8.20
Lead	32.50
Manganese	38.00
Strontium	44.00
Mercury	<

ANALYTES	CON. ug/l
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	60.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	<
Chloroform	<
Trichlorethylene	<
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SURFACEWATER SAMPLING SITE
SW 021

ANALYTES	CON. ug/l
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Phosphates	<
Sulfate	9340.
Chloride	6000.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	355.00
Antimony	<
Barium	404.00
Cadmium	<
Chromium	83.70
Lead	<
Manganese	115.00
Strontium	40.00
Mercury	<
Copper	<
Zinc	<
Arsenic	<
Beryllium	<
Nickel	71.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Benzene	*
Chloroform	*
Trichlorethylene	*
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthiate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

APPENDIX C

ANALYTICAL RESULTS FOR

SEDIMENT SAMPLING SITES

(Sed001 - Sed003, Sed005 - Sed021)

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 001

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	8.2
2,4,6 - TNT	<	Zinc	36.8
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	7.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	486.49	2,4-dichlorophenol	<
Chloride	79.	Dibutylphthlate	<
Fluoride	<	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	643.6	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	92.2	Dieldrin	<
Cadmium	<	Alpha BHC	<
Chromium	6.8	Heptachlor	<
Lead	15.5	Lindane	<
Manganese	83.8	Toxaphene	<
Strontium	11.2	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 002

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	8.0
2,4,6 - TNT	<	Zinc	42.3
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	5.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	212.00	2,4-dichlorophenol	*
Chloride	34.	Dibutylphthlate	*
Fluoride	<	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	2116.4	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	62.0	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	9.3	Heptachlor	*
Lead	14.6	Lindane	*
Manganese	130.0	Toxaphene	*
Strontium	6.4	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 003

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	<	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 005

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	5.1
2,4,6 - TNT	<	Zinc	29.5
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	7.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	152.91	2,4-dichlorophenol	*
Chloride	14.	Dibutylphthlate	*
Fluoride	5.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1007.8	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	66.7	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	23.4	Heptachlor	*
Lead	21.4	Lindane	*
Manganese	85.5	Toxaphene	*
Strontium	7.0	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 006

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	0.78	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 007

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	<	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 008

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	<	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 009

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	3.6
2,4,6 - TNT	<	Zinc	19.2
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	8.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	
Sulfate	129.19	2,4-dichlorophenol	<
Chloride	7.	Dibutyiphthlate	<
Fluoride	<	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1872.2	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	255.0	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	7.8	Heptachlor	*
Lead	17.0	Lindane	*
Manganese	177.1	Toxaphene	*
Strontium	17.5	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 010

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	9.1
2,4,6 - TNT	<	Zinc	36.5
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	8.1
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	34.78	2,4-dichlorophenol	*
Chloride	9.	Dibutylphthlate	*
Fluoride	60.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1408.0	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	91.4	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	16.2	Heptachlor	*
Lead	13.3	Lindane	*
Manganese	210.7	Toxaphene	*
Strontium	14.8	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 011

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	<
2,4,6 - TNT	<	Zinc	5.0
1,3,5 - TNB	<	Arsenic	28.4
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	6.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	162.17	2,4-dichlorophenol	<
Chloride	8.	Dibutylphthlate	<
Fluoride	<	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1134.6	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	67.1	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	7.4	Heptachlor	*
Lead	12.3	Lindane	*
Manganese	120.5	Toxaphene	*
Strontium	13.6	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 012

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	11.7
2,4,6 - TNT	<	Zinc	53.
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	1.
2,6 - DNT	<	Nickel	14.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	405.93	2,4-dichlorophenol	<
Chloride	120.	Dibutylphthlate	<
Fluoride	<	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1229.6	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	<	Dieldrin	<
Cadmium	<	Alpha BHC	<
Chromium	9.8	Heptachlor	<
Lead	42.7	Lindane	<
Manganese	151.6	Toxaphene	<
Strontium	18.3	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 013

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	24.8
2,4,6 - TNT	<	Zinc	105.0
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	1.
2,6 - DNT	<	Nickel	24.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	2978.9	2,4-dichlorophenol	<
Chloride	87.	Dibutylphthlate	<
Fluoride	<	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	2154.7	Organics (GC/EC)	
Antimony	<	p.p'-DDT	<
Barium	<	Dieldrin	<
Cadmium	<	Alpha BHC	<
Chromium	16.5	Heptachlor	<
Lead	32.9	Lindane	<
Manganese	5.9	Toxaphene	<
Strontium	42.2	Aroclor 1016	<
Mercury	<	Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 014

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Sulfate	75.1
Chloride	372.
Fluoride	12.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	1142.4
Antimony	<
Barium	1031.4
Cadmium	<
Chromium	130.6
Lead	72.2
Manganese	119.7
Strontium	373.2
Mercury	<

ANALYTES	CON. ug/g
Copper	69.6
Zinc	3.3
Arsenic	<
Beryllium	<
Nickel	6.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	2.
Nitrobenzene	<
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 015

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	4.2
2,4,6 - TNT	<	Zinc	19.3
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	4.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	64.8	2,4-dichlorophenol	<
Chloride	11.	Dibutylphthlate	<
Fluoride	<	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1347.3	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	130.7	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	6.7	Heptachlor	*
Lead	10.1	Lindane	*
Manganese	63.8	Toxaphene	*
Strontium	10.5	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 016

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	3.4
2,4,6 - TNT	<	Zinc	19.3
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	3.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	19.62	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	414.40	2,4-dichlorophenol	<
Chloride	55.	Dibutylphthlate	<
Fluoride	6.	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1291.4	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	122.0	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	7.1	Heptachlor	*
Lead	9.9	Lindane	*
Manganese	73.2	Toxaphene	*
Strontium	13.9	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 017

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	12.2
2,4,6 - TNT	<	Zinc	3.9
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	15.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	12.25	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	84.92	2,4-dichlorophenol	<
Chloride	41.	Dibutylphthlate	<
Fluoride	<	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1520.7	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	333.	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	9.1	Heptachlor	*
Lead	32.1	Lindane	*
Manganese	1032.3	Toxaphene	*
Strontium	29.6	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 018

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Sulfate	113.36
Chloride	7.
Fluoride	<
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	1502.2
Antimony	<
Barium	133.6
Cadmium	<
Chromium	5.0
Lead	11.3
Manganese	426.3
Strontium	18.2
Mercury	<

ANALYTES	CON. ug/g
Copper	3.7
Zinc	101.5
Arsenic	<
Beryllium	<
Nickel	6.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 019

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	8.3
2,4,6 - TNT	<	Zinc	25.0
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	6.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	92.54	2,4-dichlorophenol	<
Chloride	20.	Dibutylphthlate	<
Fluoride	<	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	967.2	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	175.8	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	11.4	Heptachlor	*
Lead	22.6	Lindane	*
Manganese	239.2	Toxaphene	*
Strontium	26.7	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 020

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	1.6
2,4,6 - TNT	<	Zinc	3.0
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	2.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	<
Nitrite	<	O-chlorophenol	<
Sulfate	27.1	2,4-dichlorophenol	<
Chloride	73.	Dibutylphthlate	<
Fluoride	6.	Diethylphthlate	<
Chromate	<	Nitrobenzene	<
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1486.0	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	42.1	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	4.3	Heptachlor	*
Lead	30.7	Lindane	*
Manganese	139.6	Toxaphene	*
Strontium	3.1	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SEDIMENT SAMPLING SITE
SED 021

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Sulfate	550.2
Chloride	24.
Fluoride	6.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	702.
Antimony	<
Barium	168.2
Cadmium	<
Chromium	8.0
Lead	30.3
Manganese	143.4
Strontium	20.0
Mercury	<

ANALYTES	CON. ug/g
Copper	9.3
Zinc	37.2
Arsenic	<
Beryllium	<
Nickel	6.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	<
Dieldrin	<
Alpha BHC	<
Heptachlor	<
Lindane	<
Toxaphene	<
Aroclor 1016	<
Aroclor 1260	<

< less than established detection limit.

* Analyte or category not tested as per project scope.

APPENDIX D

ANALYTICAL RESULTS FOR SOIL SAMPLING SITES

SOIL SAMPLING SITES

(AREAS 010 - 080)

LONCHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL[illegible]

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	8.1
2,4,6 - TNT	<	Zinc	25.4
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	6.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	40.0	2,4-dichlorophenol	*
Chloride	6.	Dibutylphthlate	*
Fluoride	7.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1361.4	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	102.6	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	11.2	Heptachlor	*
Lead	29.4	Lindane	*
Manganese	49.8	Toxaphene	*
Strontium	10.1	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOILC152

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	<
Nitrite	<
Sulfate	29.7
Chloride	5.
Fluoride	8.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	1435.
Antimony	<
Barium	106.6
Cadmium	<
Chromium	12.3
Lead	26.1
Manganese	99.4
Strontium	9.5
Mercury	<

ANALYTES	CON. ug/g
Copper	17.4
Zinc	56.4
Arsenic	<
Beryllium	<
Nickel	5.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0103

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	15.4
2,4,6 - TNT	<	Zinc	47.2
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	5.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	8.33	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	40.49	2,4-dichlorophenol	*
Chloride	7.	Dibutylphthlate	*
Fluoride	9.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1129.6	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	98.4	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	14.4	Heptachlor	*
Lead	28.4	Lindane	*
Manganese	122.1	Toxaphene	*
Strontium	9.4	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL016C

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	**	Copper	*
2,4,6 - TNT	**	Zinc	*
1,3,5 - TNB	**	Arsenic	*
2,4 - DNT	**	Beryllium	*
2,6 - DNT	**	Nickel	*
Nitrobenzene	**	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	<
Nitrite	*	O-chlorophenol	<
Sulfate	*	2,4-dichlorophenol	<
Chloride	*	Dibutylphthlate	<
Fluoride	*	Diethylphthlate	<
Chromate	*	Nitrobenzene	<
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

** Samples 0101, 0102 and 0103 each screened individually for organics by HPLC.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0201

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Sulfate	*
Chloride	*
Fluorid	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/g
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
P.P'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0202

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/g
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0203

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0301

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	328.76	Zinc	*
1,3,5 - TNB	10.35	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0302

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	7645.68	Zinc	*
1,3,5 - TNB	64.65	Arsenic	*
2,4 - DNT	13.50	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0303

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	42.44	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0304

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	0.90	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryilium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0305

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	6.03	Zinc	*
1,3,5 - TNB	2.82	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0306

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	<	Zinc	*
1,3,5 - TNP	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0307

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	20.77
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*

ANALYTES	CON. ug/g
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0308

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	5588.82	Zinc	*
1,3,5 - TNB	17.55	Arsenic	*
2,4 - DNT	16.88	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0401

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	2.7
2,4,6 - TNT	10.15	Zinc	8.1
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	1.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	15.8	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	38.2	2,4-dichlorophenol	*
Chloride	<	Dibutylphthlate	*
Fluoride	6.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1099.8	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	87.0	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	16.3	Heptachlor	*
Lead	25.5	Lindane	*
Manganese	90.0	Toxaphene	*
Strontium	5.0	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0402

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	41.1
2,4,6 - TNT	4.61	Zinc	17.4
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	4.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	22.3	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	37.5	2,4-dichlorophenol	*
Chloride	<	Dibutylphthlate	*
Fluoride	5.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1386.4	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	136.6	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	12.3	Heptachlor	*
Lead	26.3	Lindane	*
Manganese	199.2	Toxaphene	*
Strontium	9.8	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0403

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	0.96
Nitrite	<
Sulfate	33.25
Chloride	<
Fluoride	6.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	1426.1
Antimony	<
Barium	57.2
Cadmium	<
Chromium	10.3
Lead	24.6
Manganese	137.5
Strontium	4.3
Mercury	<

ANALYTES	CON. ug/g
Copper	2.8
Zinc	9.2
Arsenic	<
Beryllium	<
Nickel	2.2
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL040C

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	**
2,4,6 - TNT	**
1,3,5 - TNB	**
2,4 - DNT	**
2,6 - DNT	**
Nitrobenzene	**
Anions:	
Nitrate	*
Nitrite	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0501

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	3.3
2,4,6 - TNT	<	Zinc	6.3
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	4.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	8.00	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	61.93	2,4-dichlorophenol	*
Chloride	5.	Dibutylphthlate	*
Fluoride	6.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1128.6	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	227.8	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	8.4	Heptachlor	*
Lead	27.6	Lindane	*
Manganese	742.0	Toxaphene	*
Strontium	9.4	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0502

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	7.41
Nitrite	<
Sulfate	28.83
Chloride	<
Fluoride	6.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	1185.5
Antimony	<
Barium	165.8
Cadmium	<
Chromium	9.2
Lead	26.5
Manganese	499.5
Strontium	11.8
Mercury	<

ANALYTES	CON. ug/g
Copper	2.7
Zinc	16.1
Arsenic	<
Beryllium	<
Nickel	5.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0503

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	2.0
2,4,6 - TNT	<	Zinc	11.1
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	4.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	41.04	2,4-dichlorophenol	*
Chloride	<	Dibutylphthlate	*
Fluoride	<	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	3.6	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	61.0	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	9.4	Heptachlor	*
Lead	26.6	Lindane	*
Manganese	140.8	Toxaphene	*
Strontium	3.9	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL05CC

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	**
2,4,6 - TNT	**
1,3,5 - TNB	**
2,4 - DNT	**
2,6 - DNT	**
Nitrobenzene	**
Anions:	
Nitrate	*
Nitrite	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Pentachlorophenol	<
O-chlorophenol	<
2,4-dichlorophenol	<
Dibutylphthlate	<
Diethylphthlate	<
Nitrobenzene	<
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL050[illegible]

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	23.8
2,4,6 - TNT	<	Zinc	26.9
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	8.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	70.00	2,4-dichlorophenol	*
Chloride	21.	Dibutylphthlate	*
Fluoride	11.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	3.7	Organics (GC/EC)	
Antimony	<	p.p'-DDT	*
Barium	126.2	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	9.8	Heptachlor	*
Lead	27.0	Lindane	*
Manganese	141.6	Toxaphene	*
Strontium	14.5	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0602

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	4.2
2,4,6 - TNT	<	Zinc	52.9
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	3.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	14.94	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	411.85	2,4-dichlorophenol	*
Chloride	1224.	Dibutylphthlate	*
Fluoride	<	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1276.7	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	83.8	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	6.0	Heptachlor	*
Lead	27.3	Lindane	*
Manganese	61.2	Toxaphene	*
Strontium	6.6	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0603

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	12.23
Nitrite	<
Sulfate	148.72
Chloride	89.
Fluoride	9.
Chromate	<
Thiocyanate	<
Cyanide	<
Metals:	
Aluminum	1195.6
Antimony	<
Barium	106.1
Cadmium	<
Chromium	8.8
Lead	27.4
Manganese	162.2
Strontium	10.8
Mercury	<

ANALYTES	CON. ug/g
Copper	9.4
Zinc	40.9
Arsenic	<
Beryllium	<
Nickel	7.
Selenium	<
Silver	<
Thallium	<
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL060C

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	**	Copper	*
2,4,6 - TNT	**	Zinc	*
1,3,5 - TNB	**	Arsenic	*
2,4 - DNT	**	Beryllium	*
2,6 - DNT	**	Nickel	*
Nitrobenzene	**	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	<
Nitrite	*	O-chlorophenol	<
Sulfate	*	2,4-dichlorophenol	<
Chloride	*	Dibutylphthlate	<
Fluoride	*	Diethylphthlate	<
Chromate	*	Nitrobenzene	<
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0701T

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	155.1
2,4,6 - TNT	<	Zinc	19.6
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	7.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	244.62	2,4-dichlorophenol	*
Chloride	72.	Dibutylphthlate	*
Fluoride	11.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1954.3	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	557.3	Dieldrin	*
Cadmium	2.3	Alpha BHC	*
Chromium	14.5	Heptachlor	*
Lead	27.2	Lindane	*
Manganese	121.0	Toxaphene	*
Strontium	153.0	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0701B

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:		Mercury	<
1,3-DNB	<	Copper	153.9
2,4,6 - TNT	<	Zinc	472.0
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	18.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	53.44	2,4-dichlorophenol	*
Chloride	14.	Dibutylphthlate	*
Fluoride	0.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1067.0	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	290.4	Dieldrin	*
Cadmium	5.2	Alpha BHC	*
Chromium	22.6	Heptachlor	*
Lead	<	Lindane	*
Manganese	3.1	Toxaphene	*
Strontium	232.9	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0702T

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	5.1
2,4,6 - TNT	<	Zinc	37.9
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	5.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	<
Anions:		Organics (GC/MS):	
Nitrate	7.09	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	236.89	2,4-dichlorophenol	*
Chloride	120.	Dibutylphthlate	*
Fluoride	9.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1461.5	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	208.5	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	9.0	Heptachlor	*
Lead	<	Lindane	*
Manganese	390.4	Toxaphene	*
Strontium	25.9	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0702B

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	53.6
2,4,6 - TNT	<	Zinc	133.9
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	6.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	5.
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	469.17	2,4-dichlorophenol	*
Chloride	236.	Dibutylphthlate	*
Fluoride	10.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1462.6	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	201.9	Dieldrin	*
Cadmium	1.2	Alpha BHC	*
Chromium	16.5	Heptachlor	*
Lead	<	Lindane	*
Manganese	352.3	Toxaphene	*
Strontium	340.9	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0703T

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	23.9
2,4,6 - TNT	<	Zinc	169.6
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	8.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	5.
Anions:		Organics (GC/MS):	
Nitrate	24.46	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	1323.00	2,4-dichlorophenol	*
Chloride	102.	Dibutylphthlate	*
Fluoride	70.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	604.2	Organics (GC/EC)	
Antimony	<	P,P'-DDT	*
Barium	991.1	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	95.4	Heptachlor	*
Lead	<	Lindane	*
Manganese	234.3	Toxaphene	*
Strontium	91.2	Aroclor 1016	*
Mercury	6.00	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0702B

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	26.5
2,4,6 - TNT	<	Zinc	132.6
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	9.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	5.
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	446.25	2,4-dichlorophenol	*
Chloride	100.	Dibutylphthlate	*
Fluoride	19.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1162.8	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	42.6	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	47.9	Heptachlor	*
Lead	<	Lindane	*
Manganese	184.6	Toxaphene	*
Strontium	116.3	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0704T

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	66.6
2,4,6 - TNT	13.6	Zinc	759.2
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	16.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	5.
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	197.26	2,4-dichlorophenol	*
Chloride	426.	Dibutylphthlate	*
Fluoride	17.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1799.2	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	151.8	Dieldrin	*
Cadmium	31.2	Alpha BHC	*
Chromium	76.7	Heptachlor	*
Lead	<	Lindane	*
Manganese	5.2	Toxaphene	*
Strontium	1071.2	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0704B

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	63.6
2,4,6 - TNT	<	Zinc	773.8
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	10.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	5.
Anions:		Organics (GC/MS):	
Nitrate	<	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	239.56	2,4-dichlorophenol	*
Chloride	810.	Dibutylphthlate	*
Fluoride	10.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	2024.6	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	178.1	Dieldrin	*
Cadmium	15.9	Alpha BHC	*
Chromium	58.3	Heptachlor	*
Lead	<	Lindane	*
Manganese	2.	Toxaphene	*
Strontium	1378.	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0705T

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	8.2
2,4,6 - TNT	<	Zinc	53.2
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	5.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	5.
Anions:		Organics (GC/MS):	
Nitrate	5.00	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	54.46	2,4-dichlorophenol	*
Chloride	5.	Dibutylphthlate	*
Fluoride	7.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	2230.1	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	200.5	Dieldrin	*
Cadmium	<	Alpha BHC	*
Chromium	10.0	Heptachlor	*
Lead	12.8	Lindane	*
Manganese	325.3	Toxaphene	*
Strontium	32.8	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0705B

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	86.3
2,4,6 - TNT	<	Zinc	23.9
1,3,5 - TNB	<	Arsenic	<
2,4 - DNT	<	Beryllium	<
2,6 - DNT	<	Nickel	7.
Nitrobenzene	<	Selenium	<
		Silver	<
		Thallium	5.
Anions:		Organics (GC/MS):	
Nitrate	19.43	Pentachlorophenol	*
Nitrite	<	O-chlorophenol	*
Sulfate	152.76	2,4-dichlorophenol	*
Chloride	6.	Dibutylphthlate	*
Fluoride	9.	Diethylphthlate	*
Chromate	<	Nitrobenzene	*
Thiocyanate	<		
Cyanide	<		
Metals:			
Aluminum	1501.2	Organics (GC/EC)	
Antimony	<	p,p'-DDT	*
Barium	188.2	Dieldrin	*
Cadmium	2.7	Alpha BHC	*
Chromium	15.6	Heptachlor	*
Lead	4.9	Lindane	*
Manganese	49.9	Toxaphene	*
Strontium	137.3	Aroclor 1016	*
Mercury	<	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL07OCT

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	**	Copper	*
2,4,6 - TNT	**	Zinc	*
1,3,5 - TNB	**	Arsenic	*
2,4 - DNT	**	Beryllium	*
2,6 - DNT	**	Nickel	*
Nitrobenzene	**	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	<
Nitrite	*	O-chlorophenol	<
Sulfate	*	2,4-dichlorophenol	<
Chloride	*	Dibutylphthlate	<
Fluoride	*	Diethylphthlate	<
Chromate	*	Nitrobenzene	<
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL007CCB

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	**	Copper	*
2,4,6 - TNT	**	Zinc	*
1,3,5 - TNB	**	Arsenic	*
2,4 - DNT	**	Beryllium	*
2,6 - DNT	**	Nickel	*
Nitrobenzene	**	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	<
Nitrite	*	O-chlorophenol	
Sulfate	*	2,4-dichlorophenol	<
Chloride	*	Dibutylphthlate	<
Fluoride	*	Diethylphthlate	<
Chromate	*	Nitrobenzene	<
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0901T

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	<	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p,p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0801B

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	1.86	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0802T

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	<	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0802B

ANALYTES	CON. ug/g	ANALYTES	CON. ug/g
Explosives:			
1,3-DNB	<	Copper	*
2,4,6 - TNT	<	Zinc	*
1,3,5 - TNB	<	Arsenic	*
2,4 - DNT	<	Beryllium	*
2,6 - DNT	<	Nickel	*
Nitrobenzene	<	Selenium	*
		Silver	*
		Thallium	*
Anions:		Organics (GC/MS):	
Nitrate	*	Pentachlorophenol	*
Nitrite	*	O-chlorophenol	*
Sulfate	*	2,4-dichlorophenol	*
Chloride	*	Dibutylphthlate	*
Fluoride	*	Diethylphthlate	*
Chromate	*	Nitrobenzene	*
Thiocyanate	*		
Cyanide	*		
Metals:			
Aluminum	*	Organics (GC/EC)	
Antimony	*	p.p'-DDT	*
Barium	*	Dieldrin	*
Cadmium	*	Alpha BHC	*
Chromium	*	Heptachlor	*
Lead	*	Lindane	*
Manganese	*	Toxaphene	*
Strontium	*	Aroclor 1016	*
Mercury	*	Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL08C3T

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p,p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
ANALYTICAL RESULTS FOR SOIL SAMPLING SITE
SOIL0803B

ANALYTES	CON. ug/g
Explosives:	
1,3-DNB	<
2,4,6 - TNT	<
1,3,5 - TNB	<
2,4 - DNT	<
2,6 - DNT	<
Nitrobenzene	<
Anions:	
Nitrate	*
Nitrite	*
Sulfate	*
Chloride	*
Fluoride	*
Chromate	*
Thiocyanate	*
Cyanide	*
Metals:	
Aluminum	*
Antimony	*
Barium	*
Cadmium	*
Chromium	*
Lead	*
Manganese	*
Strontium	*
Mercury	*
Copper	*
Zinc	*
Arsenic	*
Beryllium	*
Nickel	*
Selenium	*
Silver	*
Thallium	*
Organics (GC/MS):	
Pentachlorophenol	*
O-chlorophenol	*
2,4-dichlorophenol	*
Dibutylphthlate	*
Diethylphthlate	*
Nitrobenzene	*
Organics (GC/EC)	
p.p'-DDT	*
Dieldrin	*
Alpha BHC	*
Heptachlor	*
Lindane	*
Toxaphene	*
Aroclor 1016	*
Aroclor 1260	*

< less than established detection limit.

* Analyte or category not tested as per project scope.

APPENDIX E

DATA MANAGEMENT FORMS ON BATCHES OF METAL ANALYTES FOR WHICH FQAC HAD TO OVERRIDE ESTABLISHED QA/QC SYSTEM

DATA SHEET # 82 588 A DATA SHEET SERIES (A-C) 7 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Donalea Dinsmore
Date Samples Analyzed 12-6-82 Time 11:20 AM
Parameter (Metals) MANGANESE USATHAMA Method # 1M
Matrix 1 Category 3 Batch 1
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 11, Page # 1
File # .
NOTES: Units are in µg/l

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	50	47	50	
2.0X$_D$	125	124	124	
10.0X$_D$	250	256	253	
Blank	0	0	0	

Standard Curve Data Slope: N/A
Corr. Coff.: N/A Y-intercept: N/A

DATA:

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration +01	Analytical FOAC # Note .580
2XD Spike	1-3-1	46				46	001
101	1-3-2	113		4		452	002
102	1-3-3	119		4		476	003
104	1-3-4	85				85	004
103	1-3-5	169				169	005
105	1-3-6	33.4		100		3340	006
103	1-3-7	90		4		360	007
106	1-3-8	163		4		652	008
107	1-3-9	187				187	009
108	1-3-10	118		100		11800	010
109	1-3-11	15				15	011
110	1-3-12	157		10		1570	012
111	1-3-13	29		4		116	013
112	1-3-14	330		100		3300	014
120	1-3-15	151		4		604	015
121	1-3-16	126				126	016
122	1-3-17	44.6		100		4460	017
123	1-3-18	72				72	018
5XD Spike	1-3-19	129				129	019

Batch ~~AAL~~ → ABD

Dup.

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 588 B

Accuracy (Spikes)

	Found Value	Background Value	Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	191	- 142	= 49	÷ 50	x 100	98		
Blind Spike FQAC>	46 / 129	- 0 / 0	= 46 / 129	÷ 50 / 125	x 100	92% / 103.2%	107.2 / 96.8	104.3 / 94.7

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	146	142	4.0	6.54
Blind Replicate FQAC>	169	360		

Analyst's Report to Departmental Supervisor: passes Analytical Q.C.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All Samples between 10-200 MG/L

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 12-10-82 TIME 4:15 pm

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warren

DATA SHEET # 82 588 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): ( ) Passed (X) Failed

NOTES: FQAC checked Analysist Replicates precision ok Replicates were treated differently FQAC will override standard Q.C.! one diluted.

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____
with override

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed Richard D. Langley

DATA SHEET # 82 589 A DATA SHEET SERIES (A-C) 8 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Donalea [illegible]
Date Samples Analyzed 12-7-82 Time 10:00 AM
Parameter (Metals) Strontium USATHAMA Method # [illegible]
Matrix 1 Category 3 Batch 1
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 11, Page # 5
File # .
NOTES: Units Are Mg/l

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X D	50	52	50	
2.0X D	[illegible]	126	123	
10.0X D	[illegible]	[illegible]	[illegible]	
Blank	0	0	0	

Standard Curve Data Slope: N/A
Corr. Coff.: N/A Y-intercept: N/A

DATA:

Batch ~~[illegible]~~ ABE

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	Analytical # FOAC Note
2XD Spike	1-3-1	47				47	001
101	1-3-2	260				260	002
102	1-3-3	[illegible]				444	003
104	1-3-4	96				96	004
103 Dup	1-3-5	[illegible]					005
105	1-3-6	173		40		6920	006
103	1-3-7	454				454	007
106	1-3-8	272				272	008
107	1-3-9	260				260	009
108	1-3-10	[illegible]		[illegible]		8200	010
109	1-3-11	80				80	011
110	1-3-12	98		[illegible]		[illegible]	012
111	1-3-13	190				[illegible]	013
112	1-3-14	70				[illegible]	014
120	1-3-15	412				[illegible]	015
121	1-3-16	180				180	016
122	1-3-17	278		4		1112	017
123	1-3-18	72				72	018
5XD Spike	1-3-19	126				126	019
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 589 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	294	-	231	=	53	÷	50	x 100	106		
Blind Spike FQAC>	47/126	-	0/0	=	97/126	÷	50/125	x 100	94/100.8	105.2 / 84.1	113.6 / 81.8

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	231	199	32	24.2
Blind Replicate FQAC>	398	454	56	

Analyst's Report to Departmental Supervisor: Poss. duplicated QC.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All Spikes between 25-200 ug/L

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (✓) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 2-13-82 TIME 8:45

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warren

DATA SHEET # 82 589 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: Limited Data base for precision Results accepted by FQAC As within Reason.

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed [signature]

DATA SHEET # 82 599 A DATA SHEET SERIES (A-C) 1 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Donnie Dinsmore
Date Samples Analyzed 12-16-82 Time 9:25
Parameter (Metals) Alumium USATHAMA Method # 1B
Matrix 1 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 5, Page # 43,
File # .
NOTES: All [illegible]

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	10	8.9	10.6	
2.0X$_D$	50	53.8	48.5	
10.0X$_D$	100	98.3	92.6	
Blank	0	0	0	

Standard Curve Data Slope: 0.0180
Corr. Coff.: 0.9943 Y-intercept: 0.000001

DATA:

ABO	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
~~AAM~~ 001	125	1-3-20	21.4				21.4	
002	124	1-3-21	40.8		10		408	
003	126	1-3-22	30.8		10		308	
004	124D	1-3-23	200				200	
005	127	1-3-24	36.9				36.9	
006	128	1-3-25	35.3		10		353	
007	129	1-3-26	24.2		10		242	
008	130	1-3-27	125				125	
009	131	1-3-28	22.2				222	
010	Spike 2XD	1-3-29	97.5				97.5	
011	132	1-3-30	23.2		10		232	
012	Spike 5XD	1-3-31	27.2		10		272	
013	33	1-3-32	132				132	
014	34	1-3-33	36.6				36.6	
015	35	1-3-34	29.8				29.8	
016	36	1-3-35	23.6		10		236	
017	37	1-3-36	22.7		10		227	
018	38	1-3-37	22.9		10		229	
019	39	1-3-38	94.3				94.3	
		- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 599 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	188.7	-	84.6	=	101.1		100	X 100	101.1	11.1	21.0
Blind Spike FQAC>	97.5 / 272.0	-	0 / 0	=	97.5 / 272.		100 / 250	X 100	97.5 / 108.8	8.5	7.6

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	93.3	87.6	5.70	6.40
Blind Replicate FQAC>	408	200		

Analyst's Report to Department Supervisor: Person Analytical QC.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME [illegible] DATE [illegible] TIME [illegible]

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 599 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: Out of RANGE ANALYSIST PRECISION out of SAMP. bottle OK field duplicates MAY indicate wide VARIATION IN SAMPLE QUALITY. FQAC override based on all other data

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (Y) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 601 A DATA SHEET SERIES (A-C) 3 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed [illegible] Time [illegible]
Parameter (Metals) BARium USATHAMA Method # 13
Matrix 1 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # [illegible] ID# [illegible]
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 6, Page # 1
File # [illegible].
NOTES:

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	5.0	[illegible]	[illegible]	
2.0X$_D$	[illegible]	[illegible]	9.6	
10.0X$_D$	[illegible]	[illegible]	[illegible]	
Blank	0	0	"	

Standard Curve Data Slope: [illegible]
Corr. Coff.: [illegible] Y-intercept: [illegible]

DATA:

ABQ Action	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Note
001	125	1-3-20	[illegible]		[illegible]		[illegible]	
002	124 Dup	1-3-21	[illegible]				[illegible]	
003	126	1-3-22	33.3		10		[illegible]	
004	124	1-3-23	[illegible]				[illegible]	
005	127	1-3-24	[illegible]				[illegible]	
006	128	1-3-25	[illegible]				[illegible]	
007	129	1-3-26	[illegible]		10		[illegible]	
008	130	1-3-27	[illegible]				[illegible]	
009	131	1-3-28	[illegible]				[illegible]	
010	Spike 2xD	1-3-29	[illegible]		[illegible]		[illegible]	
011	132	1-3-30	[illegible]				[illegible]	
012	Spike 5xD	1-3-31	[illegible]		[illegible]		[illegible]	
013	133	1-3-32	[illegible]				[illegible]	
014	34	1-3-33	[illegible]				[illegible]	
015	35	1-3-34	[illegible]				[illegible]	
016	36	1-3-35	[illegible]				[illegible]	
017	37	1-3-36	[illegible]				[illegible]	
018	38	1-3-37	[illegible]				[illegible]	
019	39	1-3-38	[illegible]		[illegible]		[illegible]	
		- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 601 B

Accuracy (Spikes)

	Found Value		Background Value	=	Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>		-		=			x 100			
Blind Spike FQAC>		-		=	203 / 488	200 / 500	x 100	101.5 / 97.6		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>				
Blind Replicate FQAC>	169	92.1		

Analyst's Report to Departmental Supervisor: _____

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (✓) Passed ( ) Failed

NOTES: _____

DS check on uncorrected concentrations for range requirement:
(✓) Passed ( ) Failed

NOTES: _____

DS check accuracy: (✓) Passed ( ) Failed

NOTES: _____

DS check precision: (✓) Passed ( ) Failed

NOTES: _____

DS check rejection trend criteria: (✓) Passed ( ) Warning ( ) Failed

NOTES: _____

Department Supervisor Data:

NAME _____ DATE _____ TIME _____

CERTIFICATION: I (✓) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed _____

DATA SHEET # 82 601 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: 4 of 5 Q.C. checks within 10 precision problem only on field duplicates.

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: ( ) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I ( ) can (Y) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed Ruth D Stark

DATA SHEET # 82 602 A DATA SHEET SERIES (A-C) 4 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed [illegible] Time [illegible]
Parameter (Metals) Cadmium USATHAMA Method # [illegible]
Matrix 1 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 6, Page # 19
File # .
NOTES:

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
$0.5X_D$	[illegible]	2.66	[illegible]	
$2.0X_D$	[illegible]	[illegible]	[illegible]	
$10.0X_D$	10.00	[illegible]	[illegible]	
Blank	0	0	0	

Standard Curve Data Slope: - 0.0235
Corr. Coff.: 0.9981 Y-intercept: -0.00[illegible]

DATA:

ABR	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Note
001	125	1-3-20	1.428		10		14.28	
002	124	1-3-21	0.447		10		4.47	
003	126	1-3-22	3.540				3.54	
004	124	1-3-23	3.750				3.75	
005	127	1-3-24	0.999		[illegible]		[illegible]	
006	128	1-3-25	4.690				4.69	
007	129	1-3-26	0.967		[illegible]		9.67	
008	130	1-3-27	2.220				2.22	
009	131	1-3-28	[illegible]				[illegible]	
010	Spike 2XD	1-3-29	1.235		10		12.35	
011	132	1-3-30	0.924		10		[illegible]	
012	Spike 5XD	1-3-31	[illegible]		[illegible]		[illegible]	
013	33	1-3-32	[illegible]				[illegible]	
014	34	1-3-33	1.260				1.26	
015	35	1-3-34	[illegible]				[illegible]	
016	36	1-3-35	0.910				0.91	
017	37	1-3-36	[illegible]				2.97	
018	38	1-3-37	0.681		10		6.81	
019	39	1-3-38	[illegible]				[illegible]	
		- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 602 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	[illegible]	-	[illegible]	=	[illegible]	÷	[illegible]	X 100	[illegible]		
Blind Spike FQAC>		-		=	12.35 / 24.64		10.00 / 25.00	X 100	123.5 / 98.56	[illegible]	[illegible]

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	[illegible]	[illegible]	0.31	[illegible]
Blind Replicate FQAC>	7.77	3.54		

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME [illegible] DATE [illegible] TIME [illegible]

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 602 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): ( ) Passed ( ) Failed

NOTES: Apparent sample error in Replicate shows up in a number of metals.

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 603 A DATA SHEET SERIES (A-C) 5 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Donalea Dinnore
Date Samples Analyzed 12-18-82 Time [illegible]
Parameter (Metals) Chromium USATHAMA Method # 1B
Matrix 1 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 5, Page # 45
File # .
NOTES: [illegible] pg/l

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	5.0	5.0	4.9	
2.0X$_D$	10.1	9.9	10.1	
10.0X$_D$	20.0	20.1	20.0	
Blank	0	0	0	

Standard Curve Data Slope: 0.01652
Corr. Coff.: [illegible] Y-intercept: [illegible]

DATA:

Analytical No. ~~AAM~~ ABS	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FOAC Note
001	125	1-3-20	10.5				10.5	
002	124 Dup	1-3-21	11.2				11.2	
003	126	1-3-22	12.1				12.1	
004	124	1-3-23	<6.6				<6.6	
005	127	1-3-24	11.6				11.6	
006	128	1-3-25	<6.6				<6.6	
007	129	1-3-26	11.4				11.4	
008	130	1-3-27	<6.6				<6.6	
009	131	1-3-28	<6.6				<6.6	
010	Spike 2XD	1-3-29	20.2				20.2	
011	132	1-3-30	14.5				14.5	
012	Spike 5XD	1-3-31	48.0				48.0	
013	33	1-3-32	8.1				8.1	
014	34	1-3-33	<6.6				<6.6	
015	35	1-3-34	<6.6				<6.6	
016	36	1-3-35	9.0				9.0	
017	37	1-3-36	7.6				7.6	
018	38	1-3-37	7.1				7.1	
019	39	1-3-38	<6.6				<6.6	
		- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 603 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	22.0	-	[illegible]	=	[illegible].0		[illegible]	x 100	[illegible]		
Blind Spike FQAC>		-		=	20.2 / 48.0.		20 / 50	x 100	101 / 96.0	109 / [illegible]	113 / [illegible]

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	22.[illegible]	[illegible]	[illegible]	[illegible]
Blind Replicate FQAC>	11.0	<6.6		

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: [illegible]

DS check on uncorrected concentrations for range requirement:
(✓) Passed ( ) Failed

NOTES: [illegible]

DS check accuracy: (✓) Passed ( ) Failed

NOTES:

DS check precision: (✓) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME [illegible] DATE 12-22-82 TIME [illegible]

CERTIFICATION: I (✓) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 603 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: Quality of Field Sample has caused precision to be poor on this sample

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 604 A DATA SHEET SERIES (A-C) 6 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed [illegible] Time [illegible]
Parameter (Metals) Lead USATHAMA Method # 12
Matrix 1 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 5, Page # 13
File #.
NOTES: [illegible]

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
$0.5X_D$	10.0	10.0	11.2	
$2.0X_D$	[illegible]	[illegible]	[illegible]	
$10.0X_D$			[illegible]	
Blank	0	0	0	

Standard Curve Data Slope: [illegible]
Corr. Coff.: [illegible] Y-intercept: [illegible]

DATA:

Analytical No.	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X Dilution Factor =	Actual Concentration	FQAC Note
~~0044~~ ABT						
001	125	1-3-20	<4.49		[illegible]	
002	124 (Dup.)	1-3-21	[illegible]		<4.49	
003	126	1-3-22	<4.47		<4.47	
004	124	1-3-23	36.2		36.2	
005	127	1-3-24	<4.49		[illegible]	
006	128	1-3-25	<4.49		[illegible]	
007	129	1-3-26	<4.49		<4.49	
008	130	1-3-27	[illegible]		<4.47	
009	131	1-3-28	[illegible]		[illegible]	
010	50Ke 2XD	1-3-29	21.2		[illegible]	
011	132	1-3-30	16.3		16.3	
012	50Ke 5XD	1-3-31	53.8		[illegible]	
013	33	1-3-32	<4.49		<4.49	
014	34	1-3-33	54.4		[illegible]	
015	35	1-3-34	44.0		44.0	
016	36	1-3-35	<4.49		<4.49	
017	37	1-3-36	8.09		8.09	
018	38	1-3-37	8.18		8.18	
019	39	1-3-38	<4.47		<4.47	

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 604 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	23.2	-	<7.49	=	23.2	÷	20	x 100	116	125.7 / 96.7	143.2 / 86.2
Blind Spike FQAC>		-		=	21.2 / 53.8		20 / 50	x 100	106 / 107.6		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	<7.49	<7.49	0	2.19
Blind Replicate FQAC>	<7.49	36.2		

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: Never Voted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples [illegible] 5-10 [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 12-23-82 TIME [illegible]

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 604 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): ( ) Passed ( ) Failed

NOTES: poor field duplicate sample has cause problems with a number of metals

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (X can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 639 A DATA SHEET SERIES (A-C) 7 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed [illegible] Time [illegible]
Parameter (Metals) MANGANESE USATHAMA Method # 101
Matrix 2 Category 3 Batch 4
Systems Calibration: (X) Passed ( ) Failed
Instrument # _____ ID# _____
NOTES: _____

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 11, Page # 4,
File # _____.
NOTES: [illegible]

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
$0.5X_D$	[illegible]	49	53	
$2.0X_D$	[illegible]	124	[illegible]	
$10.0X_D$	[illegible]	224		
Blank		0		

Standard Curve Data
Corr. Coff.: ND Slope: [illegible]
Y-intercept: [illegible]

DATA:

ADC

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X Dilution Factor	= Actual Concentration	FQAC Notes
009	2-3-58	64		[illegible]	
010	2-3-59	28		[illegible]	
011	2-3-60	39		39	
012	2-3-61 ✓	50		50	
013 D	2-3-62	[illegible]		[illegible]	
012	2-3-63 ✓	[illegible]		[illegible]	
014	2-3-64	26		26	
015	2-3-65	31		31	
016	2-3-66	33		33	
Spike 2 XD	2-3-69 ✓	[illegible]		[illegible]	
017	2-3-68	49		[illegible]	
Spike 5 XD	2-3-69 ✓	[illegible]		107	
018	2-3-70	26		[illegible]	
019	2-3-71	36		36	
020	2-3-72	[illegible]		[illegible]	
021	2-3-73	11		[illegible]	
005	2-3-74	31		31	
002	2-3-75	91		91	
	- -				
	- -				

SUPPLEMENTARY DATA SHEET USED _____

DATA SHEET # 82 639 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	79	-	27	=	52	÷	50	x 100	104	105.2	104.3
Blind Spike FQAC>	52 / 127	-		=			50 / 125	x 100	104 / 101.6	96.8	99.4

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	27	24	3	6.54
Blind Replicate FQAC>	50	35	15	

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 12-10-82 TIME 4:30 PM

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warren

DATA SHEET # 82 639 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): ( ) Passed (X) Failed

NOTES: Sample variability override system

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 643 A DATA SHEET SERIES (A-C) 11 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Sammy Wallace
Date Samples Analyzed 12-6-82 Time 8:00 P.M.
Parameter (Metals) Zinc USATHAMA Method # TM
Matrix 2 Category 3 Batch 4
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 12, Page # 12, File #.
NOTES:

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	40	42	41	
2.0X$_D$	100	101	98	
10.0X$_D$	500	499	502	
Blank	0	0	0	

Standard Curve Data
Corr. Coff.: 1.0 Slope: 1.0
Y-intercept: 0.0

DATA:

ADG

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
009	2-3-58	32				32	
010	2-3-59	<29.1				<29.1	
011	2-3-60	41				41	
012 D	2-3-61	44				44	
013 D	2-3-62	<29.1				<29.1	
012	2-3-63						
014	2-3-64						
015	2-3-65						
016	2-3-66	<29.1				<29.1	
Spike 2XD	2-3-67 ✓	41				41	
017	2-3-68	<29.1				<29.1	
Spike 5XD	2-3-69 ✓	98				98	
018	2-3-70	<29.1				<29.1	
019	2-3-71						
020	2-3-72						
021	2-3-73						
005	- -						
002	- -					<29.1	
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 643 B

Accuracy (Spikes)

	Found Value		Background Value	=	Recovered Concentration	÷	Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	41	-	0	=	41	÷	40	x 100	102.5	152.1 / 61.5	165.3 / 38.7
Blind Spike FQAC>	41 / 98	-		=			40 / 100	x 100	102.5 / 98.0		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	<27.1	<27.1	0	13.7
Blind Replicate FQAC>	<27.1	44	16.9	

Analyst's Report to Departmental Supervisor: Passes duplicate QC.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES:

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Lupica DATE 12-12-82 TIME 8:00 AM

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Lupica

DATA SHEET # 82 643 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): ( ) Passed ( ) Failed

NOTES: One sample fell below detection limit which may be set to low for Actual field samples.

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (Y) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 754 A DATA SHEET SERIES (A-C) 1 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) S[illegible] Warren
Date Samples Analyzed [illegible] Time 12:00
Parameter Aluminum (Metals) USATHAMA Method # IN
Matrix 3 Category 3 Batch 1
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 7, Page # 6X,
File # .
NOTES: Units are µg/g

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X D	0.80	0.64	0.75	
2.0X D	2.00	1.93	2.08	
10.0X D	4.00	4.02	3.94	
Blank	0	0	0	

andard Curve Data Slope: 0.0871
Corr. Coff.: 0.9[illegible] Y-intercept: [illegible]

DATA:

AEU ~~AEU~~ Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
001	3-3-1	0.63		1000		630	
001D	3-3-2	1.36		1000		[illegible]	
002	3-3-3	[illegible]		[illegible]		[illegible]	
005	3-3-4	0.99		[illegible]		990	
009	3-3-5	1.85		1000		1850	
010	3-3-6	1.39		[illegible]		[illegible]	
011	3-3-7	[illegible]		[illegible]		[illegible]	
011D	3-3-8	1.35		1000		[illegible]	
012	3-3-9	1.16		1000		1160	
013	3-3-10	1.82		1000		[illegible]	
Blank	3-3-11	1.39		1000		1390	
014	3-3-12	[illegible]		1000			
Spike	3-3-13	1.42		1000		1420	
015	3-3-14	1.33		1000		1330	
Spike	3-3-15	1.40		1000		[illegible]	
016	3-3-16	1.26		1000		1260	
017	3-3-17	1.37		1000		1370	
018	3-3-18	1.48		1000		1480	
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 754 B DATA SHEET SERIES (A-C) 1 of 17

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	1280	-	1210	=	70	0.80	x 100	87.5		
Blind Spike FQAC>	1420 / 1460	-	1390	=	30 / 70	40 / 80	x 100	75% / 87.5%		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	1210	[illegible]	[illegible]	
Blind Replicate FQAC>	1350 / 630	~~1360~~ 1160 / 1360	~~[illegible]~~	

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (✓) Passed ( ) Failed

NOTES: [illegible]

DS check on uncorrected concentrations for range requirement:
(✓) Passed ( ) Failed

NOTES: All samples between 0.2 [illegible] 5.00 [illegible]

DS check accuracy: ( ) Passed (✓) Failed

NOTES: [illegible]

DS check precision: (✓) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (✓) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy [illegible] DATE 2 9 83 TIME 11.30

CERTIFICATION: I ( ) can (✓) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy [illegible]

DATA SHEET # 82 754 C DATA SHEET SERIES (A-C) 3 of 17

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: Dilution factor caused imprecision ~~Very close~~ UCL N/A for RANGE

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: One spike slightly out of RANGE but great considering background

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I ( ) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, ( ) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 756 A DATA SHEET SERIES (A-C) 3 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Douglas Dinsmore
Date Samples Analyzed 2/8/83 Time 7:00 AM
Parameter Barium (Metals) USATHAMA Method # 15
Matrix 3 Category 3 Batch 1
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 7, Page # 32,
File # .
NOTES: Units are Ng/g

Standard Levels		Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	.4xd	0.40	0.42	0.42	
2.0X$_D$	xd	1.00	0.98	1.05	
10.0X$_D$	2xd	2.00	1.89	1.98	
Blank		0	0	0	

Standard Curve Data Slope: 0.1500
Corr. Coff.: 0.9915 Y-intercept: 0.0756

DATA:

AEW

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	3-3-1	9.02		10		90.2	
	3-3-2	<0.99				<0.99	
	3-3-3	6.15		10		61.5	
	3-3-4	6.55		10		65.5	
	3-3-5	2.52		100		252.0	
	3-3-6	9.02		10		90.2	
	3-3-7	6.62		10		66.2	
	3-3-8	5.62		10		56.2	
	3-3-9	<0.99				<0.99	
	3-3-10	<0.99				<0.99	
	3-3-11	5.82		10		58.2	
	3-3-12	9.48		100		948.0	
	3-3-13	6.52		10		65.2	
	3-3-14	1.29		100		129.0	
	3-3-15	7.08		10		70.8	
	3-3-16	1.20		100		120.0	
	3-3-17	3.00		100		300.0	
	3-3-18	1.33		100		133.0	
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 756 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	130.0	-	120.0	=	10.0	10.0	x 100	100.0		
Blind Spike FQAC>	65.2 / 70.8	-	58.2	=	7 / 12.6	5.0 / 10.0	x 100	140% / 126%	118.9 / 82.9	124.7 / 73.9

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	80.0	46.1	3.9	8.44
Blind Replicate FQAC>	66.2	56.2	10	

Analyst's Report to Departmental Supervisor: Passed Analytical Q.C.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples between 0.5 to 100 [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy [illegible] DATE 2/11/83 TIME 4:30

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy [illegible]

DATA SHEET # 82 756 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: Spike only 1/10th of total con. Recovery good

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I ( ) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, ( ) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

FEB 8 1983

DATA SHEET # 82 760 A DATA SHEET SERIES (A-C) 7 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed [illegible] Time 10:00 AM
Parameter Manganese (Metals) USATHAMA Method # IN
Matrix 3 Category 3 Batch 1
Systems Calibration: (X) Passed ( ) Failed
Instrument # _____ ID# _____
NOTES: _____

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 13, Page # 17, File # _____.
NOTES: UNITS ppm

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
$0.5X_D$	0.25	0.25	0.25	
$2.0X_D$	1.00	1.06	1.00	
$10.0X_D$	5.00	2.53	2.50	
Blank		0	0	

Standard Curve Data
Corr. Coff.: N/A Slope: N/A
Y-intercept: N/A

DATA: AFA

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	3-3-1	0.82		100		82	
	3-3-2	1.08		100		108	
	3-3-3	1.29		100		129	
	3-3-4	0.184		100		84	
	3-3-5	1.95		100		195	
	3-3-6	2.08		100		208	
	3-3-7	1.19		100		119	
	3-3-8	0.58		100		58	
	3-3-9	1.43		100		143	
	3-3-10	5.0				5.0	
	3-3-11	2.89		100		289	
	3-3-12	1.10		100		110	
	3-3-13	2.90		100		290	
	3-3-14	0.63		100		63	
	3-3-15	2.92		100		292	
	3-3-16	0.72		100		72	
	3-3-17	0.93		1000		930	
	3-3-18	0.42		1000		420	
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED _____

DATA SHEET # 82 760 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	10.0	-	9.6	=	0.40	÷	0.50	X 100	80		
Blind Spike FQAC>	290/292	-	289	=	1/3		2/4	X 100	50%/75%		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	[illegible]	[illegible]	3.0	4.0
Blind Replicate FQAC>	82	108	26	

Analyst's Report to Departmental Supervisor: _____

[illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: [illegible]

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES: [illegible]

DS check precision: (X) Passed ( ) Failed

NOTES: _____

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

Department Supervisor Data:

NAME [illegible] DATE 9-3-82 TIME 5:40 PM

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 760 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: UCL established for lower RANGE, dup. Samples not great quality

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: Spike far to low to obtain good Recovery in natural material

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I ( ) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, ( ) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed Phil D. Jal

FEB 15 1983

DATA SHEET # 82 771 A DATA SHEET SERIES (A-C) 1 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible] WILSON
Date Samples Analyzed 3-6-83 Time [illegible]
Parameter Aluminum (Metals) USATHAMA Method # [illegible]
Matrix 3 AND 4 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # _____ ID# _____
NOTES: _____

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 7, Page # 90,
File # _____.
NOTES: UNITS ARE MG/G

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	0.80	0.84	0.75	
2.0X$_D$	2.00	1.93	2.08	
10.0X$_D$	10.00	11.60	3.04	
Blank	0	0	0	

Standard Curve Data
Corr. Coff.: 0.9992 Slope: [illegible]
Y-intercept: [illegible]

DATA: AFL

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
019	3-3-19	0.93		1000		930	
0190	3-3-20	1.66		1000		[illegible]	
020	3-3-21	1.48		1000		1480	
021	3-3-22	0.62		1000		620	
0101	4-3-23	1.34		1000		1340	
0102	4-3-24	1.40		1000		1400	
0103	4-3-25	[illegible]		[illegible]		[illegible]	
0401	4-3-26	1.07		1000		1070	
0401D	4-3-27	1.26		1000		1260	
0402	4-3-28	1.35		1000		1350	
0403	4-3-29	1.39		1000		1390	
0501	4-3-30	1.05		1000		1050	
Spike	4-3-31	1.14		1000		1140	
0502	4-3-32	1.10		1000		1100	
Blank	4-3-33	1.08		1000		1080	
0503	4-3-34	3.60				3.6	
Spike	4-3-35	1.10		1000		1100	
0601	4-3-36	3.60				3.6	
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED _____

DATA SHEET # 82 771 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	1380	-	1350	=	30.0	0.80	X 100	375		
Blind Spike FQAC>	1400 / 1100	-	1080	=	320.00 / 20.00	20	X 100		[illegible] / [illegible]	[illegible] / [illegible]

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	1350	1330	20.0	64
Blind Replicate FQAC>	1090	1260	170	

Analyst's Report to Departmental Supervisor: Does not [illegible] [illegible] at — sample

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None voted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples between 0.25 [illegible]

DS check accuracy: ( ) Passed (X) Failed

NOTES:

DS check precision: ( ) Passed (X) Failed

NOTES:

DS check rejection trend criteria: ( ) Passed ( ) Warning (X) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 2-9-83 TIME [illegible]

CERTIFICATION: I ( ) can (X) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warren

DATA SHEET # 82 771 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: Overide due to sample concentration

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I ( ) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, ( ) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 773 A DATA SHEET SERIES (A-C) 3 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Dwaine Dismuke
Date Samples Analyzed 2/8/83 Time 8:45
Parameter Barium (Metals) USATHAMA Method # 70
Matrix 3 AND 4 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # _____ ID# _____
NOTES: _____

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 1, Page # 24.
File # _____.
NOTES: Units are MG/L

Standard Levels		Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	0.4	0.40	0.42	0.42	
2.0X$_D$	X	1.00	0.98	1.05	
10.0X$_D$	3rd	3.00	1.81	1.98	
Blank		0	0	0	

Standard Curve Data
Slope: 0.1500
Corr. Coff.: 0.9915 Y-intercept: 0.0736

DATA: AFN

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X Dilution Factor	= Actual Concentration	FQAC Notes
	3-3-19	1.69	100	169.0	
	3-3-20 ✓	1.22	100	122.0	
	3-3-21	4.19	10	41.9	
	3-3-22	1.63	100	163.0	
	4-3-23	1.01	100	101.0	
	4-3-24	1.04	100	104.0	
	4-3-25	9.59	10	95.9	
	4-3-26 ✓	8.62	10	86.2	
	4-3-27 ✓	6.44	10	64.4	
	4-3-28	1.35	100	135.0	
	4-3-29	5.58	10	55.8	
	4-3-30 ✓	2.18	100	218.0	
	4-3-31	7.77	10	77.7	
	4-3-32	1.65	100	165.0	
	4-3-33	7.27	12	72.9	
	4-3-34 ✓	6.06	10	60.6	
	4-3-35	7.53	10	75.3	
	4-3-36	1.22	100	122.0	
	- -				
	- -				

SUPPLEMENTARY DATA SHEET USED _____

DATA SHEET # 82 773 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	137.1	-	127.0	=	10.1	10.0	X 100	101		
Blind Spike FQAC>	77.7 / 75.3	-	72.9	=	4.8 / 2.4	5 / 2.5	X 100	96% / 96%	118.7 / 82.7	123.1 / 73.1

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	130.9	127.0	3.9	8.44
Blind Replicate FQAC>	86.2	64.4	21.8	

Analyst's Report to Departmental Supervisor: Passes analytical QC

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: all samples between 0.5 to 100 ppm

DS check accuracy: (✓) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 2/14/83 TIME 5:00

CERTIFICATION: I (✓) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warren

DATA SHEET # 82 773 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: Overide due to poor sample quality and ucl not evidence for empty.

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (Y) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

FEB 8 1983

DATA SHEET # 82 781 A DATA SHEET SERIES (A-C) 11 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Unreadable Dinsmore
Date Samples Analyzed 1-21-83 Time 4:00
Parameter Zinc (Metals) USATHAMA Method #
Matrix 3 AND 4 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 13, Page # 17
File #.
NOTES: UNITS ARE MG/G

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	0.50	0.60	0.40	
2.0X$_D$	1.00	1.10	1.00	
10.0X$_D$	5.00	5.00	5.20	
Blank	0	0	0	

Standard Curve Data
Corr. Coff.: N/A Slope: N/A Y-Intercept: N/A

DATA: AFV

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X Dilution Factor	= Actual Concentration	FQAC Notes
	3-3-19	2.4	10	24.0	
	3-3-20	2.1	10	21.0	
	3-3-21	3.0		3.0	
	3-3-22	3.6	10	36.0	
	4-3-23	2.5	10	25.0	
	4-3-24	5.5	10	55.0	
	4-3-25	4.6	10	46.0	
	4-3-26	8.0		8.0	
	4-3-27	8.0		8.0	
	4-3-28	1.7	10	17.0	
	4-3-29	9.0		9.0	
	4-3-30	6.0		6.0	
	4-3-31	1.3	10	13.0	
	4-3-32	10.0		10.0	
	4-3-33	10.0		10.0	
	4-3-34	1.1	10	11.0	
	4-3-35	1.1	10	11.0	
	4-3-36	2.6	10	26.0	
	- -				
	- -				

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 781 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	21.0	-	20.0	=	1.00	1.00	X 100	100		
Blind Spike FQAC>	13.0 / 11.0	-	10.0	=	3. / 1	5 / 2	X 100	60% / 50%	108 / 88	113 / 83

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	8.0	8.0	0.0	0.10
Blind Replicate FQAC>	24.0	21.0	3	

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Voted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples between 0.5 to 100 µg/g

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME [illegible] DATE 2-2-83 TIME 10 [illegible]

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 781 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: Sample concentration and variablity account for non compliance

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: Con. of sample to high for spike

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 790 A DATA SHEET SERIES (A-C) 3 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Vaughn Division
Date Samples Analyzed 2-8-83 Time 1100
Parameter Barium (Metals) USATHAMA Method # IS
Matrix 4 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 7, Page # 36,
File #.
NOTES: Units in µg/g

Standard Levels		Expected Concentration	Found Value #1	Found Value #2	Found Value #3
$0.5X_D$	(1x1)	0.40	0.40	0.41	
$2.0X_D$	(x1)	1.00	1.00	1.01	
$10.0X_D$	(2x1)	2.00	1.99	1.99	
Blank		0	0	0	

Standard Curve Data
Slope: 0.2056
Corr. Coff.: 0.9999 Y-intercept: 0.0010

DATA: AGE

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	4-3-37	8.07		10		80.7	
	4-3-38	1.02		100		102.0	
	4-3-39	6.91		10		69.1	
	4-3-40	5.39		100		539.0	
	4-3-41	7.34		10		73.4	
	4-3-42	2.83		100		283.0	
	4-3-43	2.04		100		204.0	
	4-3-44	1.96		100		196.0	
	4-3-45	9.35		100		935.0	
	4-3-46	4.18		10		41.8	
	4-3-47	1.46		100		146.0	
	4-3-48	1.68		100		168.0	
	4-3-49	1.96		100		196.0	
	4-3-50	1.81		100		181.0	
	4-3-51	9.92		10		99.2	
	4-3-52	6.41		10		64.1	
	4-3-53	1.98		100		198.0	
	- -						
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 790 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value	Background Value	Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	176.0	168.0	8.0	10.0	X 100	80		
Blind Spike FQAC>	69.1 / 73.4	64.1	5.0 / 9.3	5 / 10	X 100	100% / 93%		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	192	168	4.0	
Blind Replicate FQAC>	16.181	99.2		

Analyst's Report to Departmental Supervisor: _____

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All Samples between 0.5-10 100 [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES: All within limits

DS check precision: (X) Passed ( ) Failed

NOTES: _____

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

Department Supervisor Data:

NAME Sammy Upton DATE 2/15/83 TIME 8:30 p.m.

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [signature]

DATA SHEET # 82 790 C DATA SHEET SERIES (A-C) _____ f _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (✓) Passed ( ) Failed

NOTES: Analyst Rep Goal Sample [redacted] not CONSISTANT between battle

FQAC check blind spike (30 accuracy): (✓) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (✓) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (✓) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I ( ) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, ( ) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 792 A FEB 8 1983 DATA SHEET SERIES (A-C) 5 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Donald Dinsmore
Date Samples Analyzed 1-29-83 Time [illegible]
Parameter Chromium (Metals) USATHAMA Method # [illegible]
Matrix 4 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 13, Page # 03,
File # .
NOTES: Units are µg/g

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	0.60	0.60	0.50	
2.0X$_D$	1.20	1.30	1.10	
10.0X$_D$	6.00	6.10	6.00	
Blank	0	0	0	

Standard Curve Data Slope: N/A
Corr. Coff.: N/A Y-intercept: N/A

DATA: AGG

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	4-3-37	5.8				5.8	
	4-3-38	8.5				8.5	
	4-3-39	9.6				9.6	
	4-3-40	1.4		10		14.0	
	4-3-41	1.3		10		13.0	
	4-3-42	2.2		10		22.0	
	4-3-43	8.8				8.8	
	4-3-44	1.6		10		16.0	
	4-3-45	9.0		10		[illegible]	
	4-3-46	4.0		10		40.0	
	4-3-47	6.[illegible]		10		[illegible]	
	4-3-48	5.5		10		55.0	
	4-3-49	9.8				9.8	
	4-3-50	1.5		10		15.0	
	4-3-51	2.0		10		20.0	
	4-3-52	6.8				6.8	
	4-3-53	7.4				7.4	
	- -						
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 792 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value	=	Recovered Concentration	÷	Expected Concentration Of Spike	x 100	% Recovery	WL 20	CL 30
Analyst Spike>	55.2	-	53.9	=	1.30	÷	1.20	x 100	108		
Blind Spike FQAC>	9.6 ~~13.0~~	-	6.8	=	1.4 ~~6.2~~		1.20	x 100	116 ~~87~~	11%	

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	1.4	1.4	0.0	0.86
Blind Replicate FQAC>	15	20	5	

Analyst's Report to Departmental Supervisor: Blind Analytical QC.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All Samples are between 0.5 to 10.0 µg/l

DS check accuracy: (X) Passed ( ) Failed

NOTES: _____

DS check precision: (X) Passed ( ) Failed

NOTES: _____

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

Department Supervisor Data:

NAME Sandra Fellman DATE 2/2/83 TIME 2:30

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [signature]

DATA SHEET # 82 792 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: Sample quality for Replicates poor

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 793 A DATA SHEET SERIES (A-C) 6 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed 2/2/82 Time [illegible]
Parameter Lead (Metals) USATHAMA Method # 13
Matrix 4 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 7, Page # 12.
File # .
NOTES: Units are [illegible]

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X D	[illegible]	0.40	0.42	
2.0X D	[illegible]	0.91	1.00	
10.0X D	[illegible]	1.99	1.96	
Blank				

Standard Curve Data Slope: [illegible]
Corr. Coff.: 0.9968 Y-intercept: [illegible]

DATA: AGH

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	4-3-37	2.63		10	-	[illegible]	
	4-3-38	2.64		10	-	26.4	
	4-3-39	2.61		10	-	[illegible]	
	4-3-40	2.63		10	-	26.3	
	4-3-41	3.25		10	-	32.5	
	4-3-42	<0.99				<0.99	
	4-3-43	<0.99				<0.99	
	4-3-44	<0.99				[illegible]	
	4-3-45	<0.99				<0.99	
	4-3-46	<0.99				<0.99	
	4-3-47	<0.99				<0.99	
	4-3-48	<0.99				<0.99	
	4-3-49					12.5	
	4-3-50	4.70				4.7	
	4-3-51	1.52		10		[illegible]	
	4-3-52	[illegible]		10		[illegible]	
	4-3-53	3.75		10		[illegible]	
	-						
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 793 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	2.02	-	<0.99	=	2.02	÷	2.00	X 100	101		
Blind Spike FQAC>	26.1 / 32.5	-	19.4	=	6.7 / 13.1		5 / 10	X 100	134% / 131%	113.1 / [illegible]	[illegible] / [illegible]

Precision (Replicates)

	Found Value I		Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	<0.99	-	<0.99	0.00	1.47
Blind Replicate FQAC>	4.7		15.2		

Analyst's Report to Departmental Supervisor: Passes Analytical Q.C.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All Samples [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warner DATE 2/11/83 TIME [illegible]

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [signature]

DATA SHEET # 82 783 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: Replicate poor MANY ~~Meth~~ metals do not check

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (Y) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

FEB 8 1983

DATA SHEET # 82 794 A DATA SHEET SERIES (A-C) 7 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Sammy Warren
Date Samples Analyzed [illegible] Time [illegible]
Parameter Manganese (Metals) USATHAMA Method # N
Matrix 4 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # _____ ID# _____
NOTES: _____

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 13, Page # [illegible],
File # _____.
NOTES: [illegible]

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	0.25	0.24	0.2[illegible]	
2.0X$_D$	0.50	[illegible]	[illegible]	
10.0X$_D$	2.50	[illegible]	[illegible]	
Blank	0	0	0	

Standard Curve Data Slope: N/A
Corr. Coff.: N/A Y-intercept: N/A

DATA: AGI

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	4-3-37	0.59		100		59	
	4-3-38	1.56		100		156	
	4-3-39	3.07		100		307	
	4-3-40	1.17		100		7	
	4-3-41	3.08		100		[illegible]	
	4-3-42	3.00				30	
	4-3-43	3.82		100		[illegible]	
	4-3-44	[illegible]		100		[illegible]	
	4-3-45	2.21		100		[illegible]	
	4-3-46	1.81		100		181	
	4-3-47	[illegible]				5.0	
	4-3-48	2.00				2.0	
	4-3-49	3.18		100		318	
	4-3-50	[illegible]		10		48	
	4-3-51	2.98		100		298	
	4-3-52	3.05		100		305	
	4-3-53	0.79		1000		790	
	- -						
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED _____

DATA SHEET # 82 794 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	3.20	-	[illegible]	=	1.20	-	1.25	X 100	96		
Blind Spike FQAC>	307 / 308	-	305	=	2 / 3			X 100		[illegible]	121.2 / [illegible]

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	2.0	2.0	0.0	0.03
Blind Replicate FQAC>	48	298		

Analyst's Report to Departmental Supervisor: Passed [illegible] QC

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (x) Passed ( ) Failed

NOTES: None [illegible]

DS check on uncorrected concentrations for range requirement:
(x) Passed ( ) Failed

NOTES: [illegible] between 0.25 to 5.00 [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME [illegible] DATE 2/3/83 TIME [illegible]

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 794 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: Disregard this Replicate

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: Spike far to SMALL

FQAC check blind spike (20 accuracy): ( ) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: ( ) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I ( ) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, ( ) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

FEB 8 1983

DATA SHEET # 82 795 A DATA SHEET SERIES (A-C) 8 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Donalea Dinsmore
Date Samples Analyzed 1-31-83 Time 8:15
Parameter Strontium (Metals) USATHAMA Method # IN
Matrix 4 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 13, Page # 31,
File # .
NOTES: Units are µg/g

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	0.50	0.60	0.50	
2.0X$_D$	1.00	1.00	[illegible]	
10.0X$_D$	5.00	5.00	4.90	
Blank	0	0	0	

Standard Curve Data Slope: N/A
Corr. Coff.: N/A Y-intercept: N/A

DATA: AGJ

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	4-3-37	0.64		10		6.4	
	4-3-38	1.04		10		10.4	
	4-3-39	0.85		10		8.5	
	4-3-40	1.48		100		148	
	4-3-41	1.15		10		11.5	
	4-3-42	2.27		100		227	
	4-3-43	2.52		10		25.2	
	4-3-44	3.31		100		331	
	4-3-45	0.86		100		86	
	4-3-46	1.14		100		114	
	4-3-47	1.03		1000		1030	
	4-3-48	1.30		1000		1300	
	4-3-49	3.21		10		32.1	
	4-3-50	1.32		100		132	
	4-3-51	1.04		100		104	
	4-3-52	0.62		10		6.2	
	4-3-53	1.10		10		11.0	
	- -						
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 795 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	1300	-	1300	=	0	1000	x 100	0		
Blind Spike FQAC>	8.5 / 11.5	-	6.2	=	2.3 / 5.3	2.5 / 5	x 100	92% / 106	109 / 84	114 / 82

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	1.31	1.29	0.02	0.50
Blind Replicate FQAC>	132	104		N/A

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: [illegible]

DS check accuracy: ( ) Passed (X) Failed

NOTES: [illegible]

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warner DATE 2/3/85 TIME 9:00

CERTIFICATION: I ( ) can (X) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warner

DATA SHEET # 82 795 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: RANGE N/A Poor Replicate quality

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: Y

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: Y

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (Y) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 797 A DATA SHEET SERIES (A-C) FEB 8 1983 10 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

ANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed 1/28/83 Time 1:47
Parameter Copper (Metals) USATHAMA Method # IN
Matrix 4 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 11, Page # 47
File # .
NOTES: [illegible]

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	0.50	0.50	0.50	
2.0X$_D$	1.00	[illegible]	1.00	
10.0X$_D$	[illegible]	5.10	5.10	
Blank	0	0	0	

Standard Curve Data Slope: N/A
Corr. Coff.: N/A Y-intercept: N/A

DATA: AGL

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	4-3-37	4.0				4.0	
	4-3-38	9.0				9.0	
	4-3-39	8.0				8.0	
	4-3-40	1.5		100		150.0	
	4-3-41	1.1		10		11.0	
	4-3-42	1.5		100		150.0	
	4-3-43	5.0				5.0	
	4-3-44	[illegible]		10		[illegible]	
	4-3-45	[illegible]		10		[illegible]	
	4-3-46	[illegible]		10			
	4-3-47	3.4		10		34.0	
	4-3-48	6.0		10		60.0	
	4-3-49	8.0				8.0	
	4-3-50	8.3		10		[illegible]	
	4-3-51	4.0		10		40.0	
	4-3-52	6.0				6.0	
	4-3-53	3.0				3.0	
	- -						
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 797 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	7.0	-	6.0	=	1.0	÷	1.0	X 100	100		
Blind Spike FQAC>	8.0 / 11.0	-	6.0	=	3 / 5		2.5 / 5	X 100	120 / 100	112 / [illegible]	[illegible] / [illegible]

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	1.5	1.5	0.0	[illegible]
Blind Replicate FQAC>	83	40		

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME [illegible] DATE 1/31/83 TIME [illegible]

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 797 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: Poor Replicate

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (Y) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

FEB 8 1983

DATA SHEET # 82 798 A DATA SHEET SERIES (A-C) 11 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Dunlap Dickson C
Date Samples Analyzed 1-27-83 Time 4:10
Parameter Zinc (Metals) USATHAMA Method # IN
Matrix 4 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 13, Page # 14.
File #.
NOTES: UNITS ARE MG/L

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	0.50	0.50	0.50	
2.0X$_D$	1.00	1.00	1.16	
10.0X$_D$	5.00	4.90	5.00	
Blank	0	0	0	

Standard Curve Data
Corr. Coff.: N/A Slope: N/A
Y-intercept: N/A

DATA: AGM

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
	4-3-37	5.1		10		51.0	
	4-3-38	4.8		10		48.0	
	4-3-39	2.2		10		22.0	
	4-3-40	1.8		10		18.0	
	4-3-41	2.5		10		25.0	
	4-3-42	4.6		100		460.0	
	4-3-43	3.7		10		37.0	
	4-3-44	1.3		100		130.0	
	4-3-45	1.6		100		160.0	
	4-3-46	1.3		100		130.0	
	4-3-47	2.3		100		230.0	
	4-3-48	2.3		100		230.0	
	4-3-49	5.3		10		53.0	
	4-3-50	2.3		10		23.0	
	4-3-51	1.6		10		16.0	
	4-3-52	1.0		10		10.0	
	4-3-53	1.1		10		11.0	
	- -						
	- -						
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 798 B DATA SHEET SERIES (A-C) _____ of _____

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	74.0	-	73.1	=	0.90	1.00	x 100	90		
Blind Spike FQAC>	22.0 / 25.0	-	20.0	=	2 / 5	2.5 / 5	x 100	80 / 100		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	1.8	1.7	0.10	0.10
Blind Replicate FQAC>	23.0	16.0		

Analyst's Report to Departmental Supervisor: _____

[illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples between 0.5 to 10.0 [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES: _____

DS check precision: (X) Passed ( ) Failed

NOTES: _____

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

Department Supervisor Data:

NAME [illegible] DATE 2/2/83 TIME 11:15

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 798 C DATA SHEET SERIES (A-C) _____ of _____

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: Poor Replicate VCL N/A

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (Y) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 605 A DATA SHEET SERIES (A-C) 7 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Dorales Dinsmore
Date Samples Analyzed 12-6-82 Time 11:30 a.
Parameter (Metals) MANGANESE USATHAMA Method # 111
Matrix 1 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 11, Page # 2
File #.
NOTES: Units Are in µg/L

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X	50	49	50	
2.0X	125	124	124	
10.0X D	250	256	253	
Blank	0	0	0	

Standard Curve Data
Corr. Coff.: N/P Slope: N/P
Y-intercept: N/P

DATA:

Analytical No.	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X Dilution Factor	= Actual Concentration	FQAC Note
ABU 001	125	1-3-20	134	10	1340	
002	124 Dup	1-3-21	83		83	
003	126	1-3-22	132	10	1320	
004	124	1-3-23	63		63	
005	127	1-3-24	186	10	1860	
006	128	1-3-25	27.2	40	1088	
007	129	1-3-26	195	4	780	
008	130	1-3-27	<12.1		<12.1	
009	131	1-3-28	<12.1		<12.1	
010	Spike 2XD	1-3-29	49.5		49.5	
011	132	1-3-30	36.2	40	1448	
012	Spike 5XD	1-3-31	127		127	
013	33	1-3-32	193		193	
014	34	1-3-33	16		16	
015	35	1-3-34	36		36	
016	36	1-3-35	90	4	360	
017	37	1-3-36	78	4	312	
018	38	1-3-37	149	4	596	1
019	39	1-3-38	196		196	

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 605 B

Accuracy (Spikes)

	Found Value		Background Value	=	Recovered Concentration	Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	191	-	142	=	49	50	x 100	98		
Blind Spike FQAC>	49.5 / 127.0	-		=	49.5 / 127.	50 / 125	x 100	99 / 101.6	105.2 / 96.8	101.3 / 94.4

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	146	142	4.0	6.54
Blind Replicate FQAC>	83	63		

Analyst's Report to Departmental Supervisor: passes Analytical Q.C.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None voted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: all samples between 10-200 mg/L

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 12-10-82 TIME 4:20 P.M.

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warren

DATA SHEET # 82 605 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (✓) Passed ( ) Failed

NOTES: Field sample precision quality poor.

FQAC check blind spike (30 accuracy): (✓) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (✓) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (✓) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (✓) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (✓) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed Rill D Sanf

DATA SHEET # 82 611 A DATA SHEET SERIES (A-C) 13 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Sammy [illegible]
Date Samples Analyzed 12-6-[illegible] Time [illegible]
Parameter (Metals) Beryllium USATHAMA Method # 1M
Matrix 1 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 12, Page # 2
File # .
NOTES: Units are in µg/l

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	10	10	12	
2.0X$_D$	20	23	24	
10.0X$_D$	50	50	50	
Blank	0	0	0	

Standard Curve Data Slope: N/A
Corr. Coff.: N/A Y-intercept: N/A

DATA:

Analytical No. ~~[illegible]~~ ACA	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Note
001	125	1-3-20	<10				<10	
002	124 Dup	1-3-21						
003	126	1-3-22						
004	124	1-3-23						
005	127	1-3-24						
006	128	1-3-25						
007	129	1-3-26						
008	130	1-3-27						
009	131	1-3-28	<10				<10	
010	Spike 2XD	1-3-29	18				18	
011	132	1-3-30	<10				<10	
012	Spike 5XD	1-3-31	48				48	
013	33	1-3-32	<10				<10	
014	34	1-3-33						
015	35	1-3-34						
016	36	1-3-35						
017	37	1-3-36						
018	38	1-3-37						
019	39	1-3-38	<10				<10	
		- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 611 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	19	-	0	=	19	÷	20	x 100	95	103.1 / 96.3	104.8 / 94.6
Blind Spike FQAC>	19 / 48	-		=	18 / 78.		20 / 50	x 100	90 / 96%		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	<10	<10	0	1.64
Blind Replicate FQAC>	<10	<10		

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES:

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples between 10-200 µg/l

DS check accuracy: (X) Passed ( ) Failed

NOTES: At [illegible] level

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME [illegible] DATE 12-13-[illegible] TIME 7:30 [illegible]

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 611 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: One spike does not check out, but our control chart was very narrow and based on limited data Override P/S

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed Gill D Langh

DATA SHEET # 82 612 A DATA SHEET SERIES (A-C) 14 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed 12-4-82 Time [illegible]
Parameter (Metals) Nickel USATHAMA Method # 111
Matrix 1 Category 3 Batch 2
Systems Calibration: (X) Passed ( ) Failed
Instrument # _____ ID# _____
NOTES: _____

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 11, Page # 18
File # _____.
NOTES: _____

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	40	43	[illegible]	
2.0X$_D$	80	97	[illegible]	
10.0X$_D$	200	226	214	
Blank	0	0	0	

Standard Curve Data Slope: [illegible]
Corr. Coff.: 0.12 Y-intercept: [illegible]

DATA:

Analytical No.	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X Dilution Factor	= Actual Concentration	FQAC Note
~~[illegible]~~ ACB						
001	125	1-3-20	[illegible]	10	[illegible]	
002	124 Dup	1-3-21	78		78	
003	126	1-3-22	114		114	
004	124	1-3-23	61		61	
005	127	1-3-24	137		137	
006	128	1-3-25	82		82	
007	129	1-3-26	109		109	
008	130	1-3-27	91		91	
009	131	1-3-28	[illegible]		[illegible]	
010	Spike 2XD	1-3-29 ✓	38		38	
011	132	1-3-30	102		102	
012	Spike 5XD	1-3-31 ✓	102		102	
013	33	1-3-32	59		59	
014	34	1-3-33	62		62	
015	35	1-3-34	41		41	
016	36	1-3-35	[illegible]		[illegible]	
017	37	1-3-36	73		73	
018	38	1-3-37	44		44	1
019	39	1-3-38	60		[illegible]	
		- -				

SUPPLEMENTARY DATA SHEET USED _____

DATA SHEET # 82 612 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	101	-	60	=	41	÷	40	x 100	102.5	109.9	112.2
Blind Spike FQAC>	38	-		=			40	x 100	95.0	89.1	84.4
	102						100		102		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	38	44	6.0	6.5
Blind Replicate FQAC>	78	61		

Analyst's Report to Departmental Supervisor: Passes Analytical D.C

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All Samples between 10-200 mg/l

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 12-13-82 TIME 9:15

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warren

DATA SHEET # 82 612 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (Y) Passed ( ) Failed

NOTES: Slightly out of precision RANGE poor field Replicate

FQAC check blind spike (30 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (Y) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (Y) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (Y) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (Y) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 615 B

Accuracy (Spikes)

	Found Value		Background Value	=	Recovered Concentration	/	Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	250	-	150	=	100	/	100	X 100	100		
Blind Spike FQAC>	106 (230)	-		=			100 / 250	X 100	106.0 (92.0)	103.2 98.4	104.4 97.2

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	150	150	0	4.6
Blind Replicate FQAC>	<50	<50		

Analyst's Report to Departmental Supervisor: Passed Analytical QC

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples between 50 100 µg/L

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Vaughn DATE 12-15-82 TIME 0815

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Vaughn

DATA SHEET # 82 615 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (30 accuracy): ( ) Passed ( ) Failed

NOTES: Results are within 10% but because of limited Data & for Thallium our control limits were very narrow.

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I ( ) can (X) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed Richard D Del

DATA SHEET # 82 616 A DATA SHEET SERIES (A-C) 1 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Sammy Warren
Date Samples Analyzed 12-16-82 Time 6:00 PM
Parameter (Metals) Aluminum USATHAMA Method # 1B
Matrix 1+2 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 5, Page # 63,
File # .
NOTES: Units are Mg/l

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	10	11.4	9.5	
2.0X$_D$	50	[illegible]	47.6	
10.0X$_D$	100	[illegible]	98.3	
Blank	0	0	0	

Standard Curve Data Slope: 0.0006
Corr. Coff.: 0.9987 Y-intercept: 0.0001

DATA:

ACF

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
40	1-3-39	50.9				50.9	
41	1-3-40	30.5				30.5	
42	1-3-41	40.1				40.1	
43	1-3-42	103.7				103.7	
44	1-3-43	19.8				19.8	
45	1-3-44	112				112	
46	1-3-45	68.9				68.9	
48	1-3-46	33.7				33.7	
47	1-3-47 ✓	36.7				<36.7	
49	1-3-48	98.5				98.5	
47D	1-3-49 ✓	<10				<10	
50	1-3-50	52.0		10		52.0	
51	1-3-51	67.7				67.7	
52	1-3-52	24.2				24.2	
53	1-3-53	22.9		10		22.9	
001	2-3-54	84.5				84.5	
Spike 2XD	2-3-55	93.6				[illegible]	
004	2-3-56	47.7				47.7	
Spike 5XD	2-3-57	24.2		10		24.2	
	- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 616 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	140.6	-	33.7	=	106.9	÷	100	x 100	106.9	[illegible]	[illegible]
Blind Spike FQAC>		-		=	93.6		100	x 100	93.6	86.5	79.6
					242		250		96.8		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	33.7	32.6	1.10	[illegible]
Blind Replicate FQAC>	36.7	<10		

Analyst's Report to Departmental Supervisor: [illegible]

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: Have Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All [illegible] 10-200 [illegible] after dilution

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy [illegible] DATE 12-29-82 TIME 4:15 PM

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed [illegible]

DATA SHEET # 82 616 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): ( ) Passed (X) Failed

NOTES: FQAC override, analysist precision very good.

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 622 A DATA SHEET SERIES (A-C) 7 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Vivian Dimmick
Date Samples Analyzed 12-6-82 Time 12:00 noon
Parameter (Metals) MANGANESE USATHAMA Method # IM
Matrix 1+2 Category A Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # _____ ID# _____
NOTES: _____

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 11, Page # 3
File # _____.
NOTES: Units mg/l

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	50	49	53	
2.0X$_D$	125	129	130	
10.0X$_D$	250	254	260	
Blank	0	0	0	

Standard Curve Data
Corr. Coff.: N/A
Slope: N/A
Y-intercept: N/A

DATA:

ACL

	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Note
001	40	1 - 3 -39	158		4		632	
002	41	1 - 3 -40	185		4		740	
003	42	1 - 3 -41	115		4		460	
004	43	1 - 3 -42	165		4		660	
005	44	1 - 3 -43	140				140	
006	45	1 - 3 -44	130		4		520	
007	46	1 - 3 -45	204				204	
008	48	1 - 3 -46	[illegible]				[illegible]	
009	47	1 - 3 -47 ✓	171		4		684	
010	49	1 - 3 -48	117		4		468	
011	47	1 - 3 -49 ✓	155		4		620	
012	50	1 - 3 -50	150				150	
013	51	1 - 3 -51	151				151	
014	52	1 - 3 -52	127				127	
015	53	1 - 3 -53	199		10		1990	
016	001	2 - 3 -54	43				43	
017	Spike 2XD	2 - 3 -55 ✓	66				66	
018	004	2 - 3 -56	41				41	1
019	Spike 5XD	2 - 3 -57 ✓	125				125	
		- -						

SUPPLEMENTARY DATA SHEET USED _____

DATA SHEET # 82 622 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	606	-	555	=	51	÷	50	x 100	102	105.2 / 96.8	107.3 / 94.7
Blind Spike FQAC>	66 / 125	-		=		÷	50 / 125	x 100	132% / 100%		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	147	144	3.0	6.54
Blind Replicate FQAC>	620	684	64	

Analyst's Report to Departmental Supervisor: Passes Analytical QC.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All Samples between 10-200 µg/l

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Warren DATE 12-10-82 TIME 4:25PM

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Warren

DATA SHEET # 82 622 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (✓) Passed ( ) Failed

NOTES: Out of RANGE of cal precision ≈10% ok PPB

FQAC check blind spike (30 accuracy): (✓) Passed ( ) Failed

NOTES: One spike did NOT PASS however 75% Meth did PASS

FQAC check blind spike (20 accuracy): (✓) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (✓) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I (✓) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (✓) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 632 A DATA SHEET SERIES (A-C) 17 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Donna Dinsmore
Date Samples Analyzed 12-9-82 Time 9:30 AM
Parameter (Metals) Thallium USATHAMA Method # 101
Matrix 1+2 Category 3 Batch 3
Systems Calibration: (X) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 11, Page # 15
File #
NOTES:

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	100	100	90	
2.0X$_D$	320	240	260	
10.0X$_D$	500	[illegible]	500	
Blank	0	0	0	

Standard Curve Data
Corr. Coff.: [illegible] Slope: N/A Y-intercept: [illegible]

DATA: ACV

	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X Dilution Factor	= Actual Concentration	FQAC Note
001	40	1-3-39	60		60	
002	41	1-3-40	100		[illegible]	
003	42	1-3-41	90		90	
004	43	1-3-42	70		70	
005	44	1-3-43	60		60	
006	45	1-3-44	40		40	
007	46	1-3-45	[illegible]		[illegible]	
008	48	1-3-46	75		75	
009	47	1-3-47 ✓	<50		<50	
010	49	1-3-48	<50		[illegible]	
011	47	1-3-49 ✓	<50		[illegible]	
012	50	1-3-50	[illegible]		[illegible]	
013	51	1-3-51	[illegible]		[illegible]	
014	52	1-3-52	[illegible]		<50	
015	53	1-3-53	70		70	
016	001	2-3-54	60		60	
017	Spike 200	2-3-55	90		90	
018	004	2-3-56	<50		[illegible]	
019	Spike 500	2-3-57	[illegible]		[illegible]	
		- -				

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 632 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	177	-	75	=	102	÷	100	x 100	102	103.2 / 98.4	104.4 / 94.2
Blind Spike FQAC>	90 / 250	-		=			100 / 250	x 100	90%		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	70	70	0	4.6
Blind Replicate FQAC>	<50	<50		

Analyst's Report to Departmental Supervisor: Passes analytical Q.C.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Noted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All Samples between 50- 1000 ppb

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy Watson DATE 12-13-82 TIME 8:45

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy Watson

DATA SHEET # 82 632 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): (✓) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (3Ø accuracy): (✓) Passed ( ) Failed

NOTES: One spike did not pass 3σ test however accuracy lines for Thallium to narrow based on limited data + 75% of other metals passed.

FQAC check blind spike (2Ø accuracy): ( ) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (✓) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (✓) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (✓) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed [signature]

DATA SHEET # 82 633 A DATA SHEET SERIES (A-C) 1 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) Sammy [illegible]
Date Samples Analyzed 12-21-82 Time [illegible]
Parameter (Metals) Aluminum USATHAMA Method # 13
Matrix 2 Category 3 Batch 4
Systems Calibration: (✓) Passed ( ) Failed
Instrument # ID#
NOTES:

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 5, Page # 65,
File # .
NOTES:

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
$0.5X_D$	50	49.5	49.9	
$2.0X_D$	100	100.5	98.9	
$10.0X_D$	200	199.7	212.0	
Blank	0	0	0	

Standard Curve Data Slope: 0.0220
Corr. Coff.: 0.9999 Y-intercept: [illegible]

DATA:

ACW ~~AAD~~	Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X	Dilution Factor	=	Actual Concentration	FQAC Notes
001	009	2-3-58	23.5		10		235	
002	010	2-3-59	23.6		10		236	
003	011	2-3-60	25.3		10		[illegible]	
004	012	2-3-61 ✓	24.0		10		240 ✓	
005	013	2-3-62	32.3		10		323	
006	012D	2-3-63 ✓	178				178 ✓	
007	014	2-3-64	25.1		10		251	
008	015	2-3-65	126				126	
009	016	2-3-66	110				110	
010	Spike	2-3-67 ✓	100				100	
011	017	2-3-68	33.7		10		337	
012	Spike	2-3-69 ✓	24.4		10		244	
013	018	2-3-70	40.7		10		407	
014	019	2-3-71	34.0		10		[illegible]	
015	020	2-3-72	22.6		10		226	
016	021	2-3-73	35.5		10		[illegible]	
017	005	2-3-74	<10				<10	
018	002	2-3-75	<10				<10	
		- -						
		- -						

SUPPLEMENTARY DATA SHEET USED

DATA SHEET # 82 633 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 2σ	CL 3σ
Analyst Spike>	360	-	250	=	110	÷	100	X 100	110	114.1 / 86.5	121.0 / 99.6
Blind Spike FQAC>		-		=	100 / 244		100 / 250	X 100	100% / 97.6%		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>	251	249	2.0	6.40
Blind Replicate FQAC>	240	178	62	

Analyst's Report to Departmental Supervisor: Passes Analytical Q.C.

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: None Voted

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: All samples between 10-200 [illegible] after [illegible]

DS check accuracy: (X) Passed ( ) Failed

NOTES:

DS check precision: (X) Passed ( ) Failed

NOTES:

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES:

Department Supervisor Data:

NAME Sammy [illegible] DATE 12-24-82 TIME 4:30

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed Sammy [illegible]

DATA SHEET # 82 633 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): ( ) Passed ( ) Failed
NOTES: Analyst check of Replicates from one sample ok; Blind check out of RANGE. Sampling problem

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME_____ DATE_____ TIME_____

Certification/Authorization: I ( ) can (X) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

DATA SHEET # 82 635 A DATA SHEET SERIES (A-C) 3 OF 17

LONGHORN ARMY AMMUNITION PLANT
CONTAMINATION STUDY DATA MANAGEMENT FORM

MANAGEMENT DATA:
Analyst(s) Name(s) [illegible]
Date Samples Analyzed _____ Time [illegible]
Parameter (Metals) Barium USATHAMA Method # _____
Matrix 2 Category 3 Batch 4
Systems Calibration: (X) Passed ( ) Failed
Instrument # _____ ID# _____
NOTES: _____

ANALYTICAL RESULTS:
Designated Location of Permanent Lab Records: Book # 6, Page # 13,
File # _____.
NOTES: [illegible]

Standard Levels	Expected Concentration	Found Value #1	Found Value #2	Found Value #3
0.5X$_D$	[illegible]	[illegible]		
2.0X$_D$	[illegible]	[illegible]		
10.0X$_D$		199.6	1-3.0	
Blank			0	

Standard Curve Data
Corr. Coff.: [illegible] Slope: [illegible]
Y-intercept: [illegible]

DATA:

ACY

Sample Point #	Lab I.D. #	Calculated Concentration Uncorrected For Dilution Factor	X Dilution Factor =	Actual Concentration	FQAC Notes
009	2-3-58	[illegible]		[illegible]	
010	2-3-59	30.0		30.0	
011	2-3-60	[illegible]		[illegible]	
012 D	2-3-61 ✓	[illegible]		[illegible]	
013	2-3-62	64.0		64.0	
012	2-3-63 ✓	15		[illegible]	
014	2-3-64	16.0	10	160	
015	2-3-65	[illegible]	[illegible]	[illegible]	
016	2-3-66	[illegible]		[illegible]	
Spike 2XD	2-3-67 ✓	180		180	
017	2-3-68	<11.4		<11.4	
Spike 5XD	2-3-69 ✓	[illegible]	10	543	
018	2-3-70	[illegible]		[illegible]	
019	2-3-71	[illegible]		[illegible]	
020	2-3-72	<11.4		<11.4	
021	2-3-73	[illegible]		[illegible]	
005	[illegible]	104.0		[illegible]	
002	[illegible]	[illegible]		[illegible]	
	- -				
	- -				

SUPPLEMENTARY DATA SHEET USED _____

DATA SHEET # 82 635 B

Accuracy (Spikes)

	Found Value		Background Value		Recovered Concentration		Expected Concentration Of Spike		% Recovery	WL 20	CL 30
Analyst Spike>	1860	-	1680	=	180		200	x 100	90%		
Blind Spike FQAC>		-		=	543		500	x 100	108.6		

Precision (Replicates)

	Found Value I	Found Value II	Calculated Range	Established UCL For Found Range
Analyst Replicate>				
Blind Replicate FQAC>	28.1	139.5		

Analyst's Report to Departmental Supervisor: _____

DEPARTMENTAL DATA REVIEW:

DS check calculations on samples noted by FQAC: (X) Passed ( ) Failed

NOTES: _____

DS check on uncorrected concentrations for range requirement:
(X) Passed ( ) Failed

NOTES: _____

DS check accuracy: (X) Passed ( ) Failed

NOTES: _____

DS check precision: (X) Passed ( ) Failed

NOTES: _____

DS check rejection trend criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

Department Supervisor Data:

NAME _____ DATE _____ TIME _____

CERTIFICATION: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey.

Signed _____

DATA SHEET # 82 635 C

FQAC DATA REVIEW:

FQAC check blind replicates (precision): ( ) Passed (X) Failed

NOTES: LARGE difference must be SAMPLE Replicate Problem all other Q.C. check out ANALYST PRECISION good overall PRO

FQAC check blind spike (30 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check blind spike (20 accuracy): (X) Passed ( ) Failed

NOTES: _____

FQAC check trend rejection criteria: (X) Passed ( ) Warning ( ) Failed

NOTES: _____

FQAC sent memo report # _____ to Principle Investigator on _____.
date

FQAC DATA: NAME _____ DATE _____ TIME _____

Certification/Authorization: I (X) can ( ) cannot certify this data as being in compliance with the EPS quality assurance program established for the LSAAP Contamination Survey. I, furthermore, (X) can ( ) cannot) authorize its release for incorporation into USATHAMA DATA SYSTEM.

Signed _____

APPENDIX F

LISTING OF ALL COMPOUNDS (IDENTIFIED AND UNIDENTIFIED) IN SCREENING ANALYSIS OF WELL AND SURFACE WATERS

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
LISTING OF OTHER IDENTIFIED AND UNIDENTIFIED COMPOUNDS
FOUND DURING HPLC SCREENING OF
GROUNDWATER AND SURFACEWATER SAMPLES

Site ID	Analytical No.	Compound Name	Con. ug/l
Well 39	AADC09	UKNC26	45.
Well 39	AADC09	UKNC19	23.
Well 39	AADC09	UKNC20	18.
Well 39	AADC09	UKNC21	18.
Well 39	AADC09	UKNC06	77.
Well 39	AADC09	UKNC22	24.
Well 39	AADC09	UKNC23	10.
Well 39	AADC09	UKNC24	11.
Well 44	AAEC02	UKNC18	12.
Well 44	AAEC02	UKNC02	6.
Well 44	AAEC02	UKNC17	3.
Well 44	AAEC02	UKNC12	5.
Well 44	AAEC02	UKNC11	3.
Well 46	AAEC04	UKNC18	20.
Well 46	AAEC04	UKNC02	6.
Well 46	AAEC04	UKNC17	3.
Well 46	AAEC04	UKNC12	9.
Well 46	AAEC04	UKNC10	2.
Well 47	AAEC05	UKNC18	36.
Well 47	AAEC05	UKNC02	13.
Well 47	AAEC05	UKNC04	50.
Well 47	AAEC05	UKNC16	13.
Well 47	AAEC05	UKNC06	10.
Well 47	AAEC05	UKNC12	21.
Well 47	AAEC05	UKNC10	5.
Well 48	AAEC06	UKNC06	24.
Well 48	AAEC06	UKNC07	13.
Well 48	AAEC06	UKNC15	14.
Well 48	AAEC06	UKNC10	7.
Well 49	AAEC08	UKNC01	20.
Well 49	AAEC08	UKNC02	14.
Well 49	AAEC08	UKNC04	60.
Well 49	AAEC08	UKNC05	44.
Well 49	AAEC08	UKNC07	45.
Well 49	AAEC08	UKNC08	54.
Well 49	AAEC08	UKNC09	4.
Well 49	AAEC08	UKNC10	7.
Well 49	AAEC08	UKNC11	10.

Site ID	Analytical No.	Compound Name	Con. ug/l
Well 50	AAE009	UKN002	5.
Well 50	AAE009	UKN006	16.
Well 50	AAE009	UKN007	13.
Well 50	AAE009	UKN008	3.
Well 50	AAE009	UKN010	2.
Well 51	AAE010	UKN007	1.
Well 51	AAE010	UKN012	2.
Well 51	AAE010	UKN013	3.
Well 51	AAE010	UKN014	6.
Well 51	AAE010	UKN016	12.
SW014	AAG005	UKN006	11.

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
LISTING OF OTHER IDENTIFIED AND UNIDENTIFIED COMPOUNDS
FOUND DURING GC/EC SCREENING OF
GROUNDWATER AND SURFACE WATER SAMPLES

Site ID	Analytical No.	Test Name	CON ug/l
Well 101	AEF001	Beta-BHC	0.05
Well 108	AEF006	Aldrin	0.16
		Endosulfan I	0.07
Well 121	AEG002	Delta-BHC	0.11
		Endrin	0.11
Well 122	AEG001	Delta-BHC	0.06
		Endosulfan I	0.11
		p,p-DDE	0.07
		endrin	0.10
Well 123	AEG004	Endosulfan I	0.07
		p,p-DDE	0.17
		endrin	0.19
Well 33	AEH001	DDT	0.27
Well 35	AEH004	DDT	0.24
Well 37	AEH006	gamma-BHC	0.05
		beta-BHC	0.07
SW 001	AEH007	gamma-BHC	0.05
SW 011	AEI002	p,p-DDE	0.63
SW 012	AEI001	gamma-BHC	0.07
		delta-BHC	0.06
		beta-BHC	0.1
		p,p-DDE	0.38
SW 013	AEI004	p,p-DDE	0.56
SW 015	AEI006	beta-BHC	0.11
SW 017	AEI008	gamma-BHC	0.08
		beta-BHC	0.17
		p,p-DDE	0.35

LONGHORN ARMY AMMUNITION PLANT CONTAMINATION SURVEY
LISTING OF OTHER IDENTIFIED AND UNIDENTIFIED COMPOUNDS
FOUND DURING GC/MS SCREENING OF
GROUNDWATER AND SURFACEWATER SAMPLES

Site ID	Analytical No.	Test Name	CON ug/l
Well 101	ADN001	Dichloromethane	123.
Well 101	ADN001	Pentane	24.
Well 101	ADN001	Trichlorethene	28.
Well 101	ADN001	Hexane	2.
Well 101	ADO001	di-N-butylphenol	2.
Well 101	ADP001	phthalic acid	78.
Well 102	ADR001	4-decene,2,2-dimethyl	12.
Well 102	ADR001	2-pentanone,4-hydroxy-4-methyl	5.
Well 102	ADR001	3,4-hexanedione,2,2,5,5-tetramethyl-monooxime	7.
Well 102	ADR001	cyclohexane,chloro	5.
Well 102	ADS001	ethanol,2-(1,1-diethylethoxy)	12.
Well 102	ADS001	phenol	2.
Well 103	ADN003	Dichloromethane	45.
Well 103	ADN003	Pentane	3.
Well 104	ADN002	Dichloromethane	4.
Well 107	ADN004	Dichloromethane	2.
Well 107	ADN004	Pentane	1.
Well 107	ADN004	Trichloroethane	9.
Well 107	ADN004	Trichloromethane	1.
Well 107	ADN004	Trichloroethene	1.
Well 107	ADN004	Benzene	1.

Site ID	Analytical No.	Test Name	CON. ug/l
Well 107	ADO004	Glycine,N-acetyl-N-(trifluoroacetyl)-,methylester	4.
Well 107	ADO004	Cyclopentane,1-bromo-2-methoxy	2.
Well 107	ADO004	diethylphthalate	3.
Well 107	ADO004	di-N-butylphthalate	1.
Well 108	ADQ003	Dichloromethane	2.
Well 108	ADQ003	Toluene	24.
Well 108	ADR003	ethanol,2-(1,1 dimethylethoxy)	2.
Well 109	ADQ011	Dichloromethane	12.
Well 109	ADQ011	1,2-dichlorethane	1.
Well 109	ADQ011	Tetrahydrofuran	3.
Well 109	ADQ011	1,2-dichlorotehene	3.
Well 109	ADQ011	1,1,2-trichloroethane	45.
Well 109	ADQ011	Trichloroethene	29.
Well 109	ADR010	1,1'-bicyclohexyl	4.
Well 109	ADR010	ethanol,2-(1,1-dimethylethoxy)	4.
Well 110	ADN008	Dichloromethane	13.
Well 110	ADN008	1,1'-oxybisethane	2.
Well 110	ADN008	Pentane	1.
Well 110	ADN008	Trichloroethene	31.
Well 111	ADO006	butyric acid ester with p-hydroxybenzonitrile	3.
Well 112	ADN010	Dichloromethane	14.
Well 112	ADN010	1,1'oxybisethane	11.
Well 112	ADN010	Pentane	20.
Well 120	ADN007	Dichloromethane	108.
Well 120	ADO007	methanamine,N-methoxy	3.
Well 120	ADP007	Phosphoric acid	18.

Site ID	Analytical No.	Test Name	CON. ug/l
Well 122	ADQ002	Dichloromethane	1.
Well 122	ADQ002	1,1'-oxybisethane	2.
Well 122	ADQ002	Pentane	1.
Well 122	ADR002	4-decene,2,2-dimethyl	12.
Well 122	ADR002	2 pentanone,4-hydroxy-4-methyl	5.
Well 122	ADR002	3,4-hexanedione,2,2,5,5-tetramethyl-monooxime	7.
Well 122	ADR002	cyclohexane,chloro	5.
Well 122	ADR002	ethanol,2-(1,1-dimethylethoxy)	12.
Well 122	ADS002	phenol	2.
Well 124	ADQ004	Dichloromethane	7.
Well 124	ADQ004	Trichloromethane	312.
Well 124	ADQ004	Pentane	1.
Well 124	ADQ004	Methylcyclopentane	24.
Well 124	ADQ004	2-chlorobutane	5.
Well 124	ADQ004	Tetrachloroethene	4.
Well 124	ADR004	ethanol,2-(1,1-dimethylethoxy)	2.
Well 125	ADQ009	Dichloromethane	7.
Well 125	ADQ009	1,2-dichloroethane	2.
Well 125	ADQ009	2,2-dichloroethane	8.
Well 125	ADQ009	1,1,2-trichloroethane	354.
Well 125	ADQ009	Toluene	55.
Well 125	ADR009	1,1'bicyclohexyl	4.
Well 125	ADS009	cyclohexane,1,3-dichloro	18.
Well 125	ADS009	2-propanone,1,3-dichloro	38.
Well 125	ADS009	2H-pyran-4-ol,tetrahydro-2-(iodomethyl)-6-methoxy	5.

Site ID	Analytical No.	Test Name	CON. ug/l
Well 126	ADQ007	Dichloromethane	4.
Well 126	ADQ007	Trichloromethane	1.
Well 126	ADR007	1,1'-bicyclohexyl	9.
Well 126	ADR007	ethanol,2-(1,1-dimethylethoxy)	16.
Well 126	ADS007	2-dibenzofuranol	3.
Well 129	ADU006	1,1'-bicyclohexyl	5.
Well 129	ADU006	di-N-butylphthalate	2.
Well 129	ADV006	ethanol,2-(1,1-dimethylethoxy)	12.
Well 129	ADU006	diethylphthalate	73.
Well 130	ADT010	Dichloromethane	153.
Well 130	ADT010	Tetrahydrofuran	46.
Well 130	ADT010	Trichloroethene	9.
Well 130	ADV009	ethanol,2-(1,1-dimethylethoxy)	9.
Well 131	ADU004	1,1'bicyclohexyl	9.
Well 131	ADV004	ethanol,2-(1,1-dimethylethoxy)	24.
Well 131	ADU004	diethylphthalate	52.
Well 33	ADU001	diethylphthalate	2.
Well 34	ADU003	1,1'-bicyclohexyl	11.
Well 39	ADT009	Dichloromethane	95,960.
Well 39	ADT009	Trichloroethane	1120.
Well 39	ADU008	ethanol,2-(1,1-dimethylethoxy)	9.
Well 43	ADW001	Dichloromethane	30.
Well 43	ADW001	1,2-dichloroethene	3.
Well 43	ADW001	1,2-dichloroethane	12.
Well 43	ADW001	1,1,2-trichloroethane	2.
Well 43	ADW001	Trichloroethene	63.
Well 43	ADY001	cyclohexanol,2-bromo	5.
Well 43	ADY001	diethylphthalate	330.

Site ID	Analytical No.	Test Name	CON. ug/l
Well 44	ADW003	Dichloromethane	251.
Well 44	ADW003	1,2-dichloroethane	3.
Well 44	ADW003	Pentane	9.
Well 44	ADW003	Trichloroethene	36.
Well 44	ADW003	Hexane	1.
Well 44	ADY003	diethylphthalate	200.
Well 45	ADW005	Dichloromethane	206.
Well 45	ADW005	1,2-dichloroethene	1.
Well 45	ADW005	1,2-dichloroethane	5.
Well 45	ADW005	Tetrahydrofuran	53.
Well 45	ADW005	Pentane	7.
Well 45	ADW005	Trichloroethene	63.
Well 45	ADX005	di-N-butylphthalate	16.
Well 46	ADW007	Dichloromethane	7.
Well 46	ADX006	di-N-butylphthalate	12.
Well 46	ADY006	naphtalene,5-ethyl-1,2,3,4-tetrahydro	4.
Well 47	ADW002	Dichloromethane	712.
Well 47	ADW002	1,2-dichloroethene	45.
Well 47	ADW002	1,2-dichloroethane	17.
Well 47	ADW002	Pentane	6.
Well 47	ADW002	Cyclohexane	9.
Well 47	ADW002	Trichloroethene	198.
Well 47	ADX002	benzene,1,2,3-trimethyl	2.
Well 47	ADX002	benzothiazole,2-butyl	6.
Well 47	ADY002	diethylphthalate	3.
Well 47	ADX002	di-N-butylphthalate	5.
Well 47	ADY002	cyclohexane,3-(2-propynyl)	5.
Well 47	ADY002	diethylphthalate	240.

Site ID	Analytical No.	Test Name	CON. ug/l
Well 48	ADW011	1,2-dichloroethene	56.
Well 48	ADW011	Trichloromethane	24.
Well 48	ADW011	1,1,2-trichloroethane	72.
Well 48	ADW011	Trichloroethene	1232.
Well 48	ADW011	Tetrachloroethene	72.
Well 48	ADY010	diethylphthalate	3.
Well 48	ADX010	di-N-butylphthalate	8.
Well 49	ADZ002	1,2-dichloroethene	126.
Well 49	ADZ002	1,2-dichloroethane	800.
Well 49	ADZ002	1,1,2-trichloroethane	2150.
Well 49	ADZ002	Trichloroethene	7200.
Well 49	AEA002	benzene,1-ethyl-4-methyl	12.
Well 49	AEA002	1-hexanol,2-ethyl	19.
Well 49	AEA002	benzaldehyde	30.
Well 49	AEA002	benxenemethanol	17.
Well 49	AEA002	ethanone,1-phenyl	68.
Well 49	AEA002	heptadecane	34.
Well 49	AEA002	phosphoric acid, triethylester	84.
Well 49	AEA002	hydroxylamine, O-decyl	52.
Well 49	AEA002	naphthalene,1-methyl	31.
Well 49	AEA002	dimethylphthalate	52.
Well 49	AEA002	decane,2-methyl	6.
Well 49	AEA002	benzene,1,2,3-trimethyl	13.
Well 49	AEA002	diethylphthalate	35.
Well 49	AEB002	pentanoic acid	4.
Well 49	AEB002	tetradecanoic acid	4.
Well 49	AEB002	butanoic acid,4 chloro	2.
Well 49	AEB002	4-methylphenol	3.
Well 49	AEB002	phthalic acid,monomethyl ester	8.
Well 49	AEB002	benzoic acid	32.
Well 49	AEB002	benzene acetic acid	215.

Site ID	Analytical No.	Test Name	CON. ug/l
Well 50	ADZ003	Dichloromethane	86.
Well 50	ADZ003	Tetrahydrofuran	21.
Well 50	ADZ003	1,2-dichloroethene	118.
Well 50	ADZ003	Trichloromethane	94.
Well 50	ADZ003	1,1,2-trichloroethane	2295.
Well 50	AEA003	heptadecane,2-methyl	50.
Well 50	AEA003	naphthalene	22.
Well 50	AEA003	dodecane,2,6,11-trimethyl	24.
Well 50	AEA003	naphthalene,1-methyl	30.
Well 50	AEA003	undecane,4,6-dimethyl	2.
Well 50	AEA003	tetradecane,2-methyl	5.
Well 50	AEA003	eicosane,10-methyl	8.
Well 51	ADZ001	Pentane	1.
Well 52	ADW009	Dichloromethane	24.
Well 52	ADW009	Tetrahydrofuran	10.
Well 52	ADW009	Trichloromethane	10.
Well 52	ADX008	di-N-butylphthalate	7.
Well 53	ADW008	Dichloromethane	48.
Well 53	ADW008	Pentane	3.
Well 53	ADX008	di-N-butylphthalate	6.
SW001	ADZ007	Dichloromethane	7.
SW001	AEB006	4-methylphenol	3.
SW009	ADZ011	Trichloroethene	2.
SW011	AEA004	2-hexanone,6-bromo	6000.
SW012	ADZ010	Dichloromethane	9.
SW013	ADZ008	Dichloromethane	6.

Site ID	Analytical No.	Test Name	CON. ug/l
SWC14	AEC001	Dichloromethane	87.
SWC14	AEC001	2-pentanone	23.
SWC14	AEC001	Pentane	2.
SWC14	AEC001	Trichloroethene	45.
SWC14	AEC001	Tetrachloroethene	35.
SWC14	AED001	ethanol,2-(1,1-dimethylethoxy)	46.
SWC14	AED001	phosphoric acid,triethylester	345.
SWC14	AED001	ethanol,2-(1,1-dimethylethoxy)	3.
SWC14	AEE001	phosphoric acid	4.
SWC14	AEE001	2-nitrophenol	5.
SWC15	AED008	1,1'bicyclohexyl	32.
SWC15	AEE008	phenol	12.
SWC15	AEE008	tetradecanoic acid	35.
SWC16	AEE007	phenol	14.
SWC17	AEC003	pentane	1.
SWC17	AED003	1,1'-bicyclohexyl	17.
SWC17	AED003	2-quinolinecarboxaldehyde, 8-hydroxy,oxime	10.
SWC17	AEE003	phenol	10.
SWC19	AED005	2-hexanone,6-bromo	346.
SWC19	AED005	cyclohexane,(cyclopentylmethyl)	27.
SWC19	AED005	phenol	8.
SWC20	AEE002	phenol	12.

APPENDIX G

MANUAL FIELD SAMPLING PROTOCOL

AND SAMPLE LOG BOOK

Manual

Field Sampling Protocol and Sample Log Book for Environmental Contamination Survey of the Longhorn Army Ammunition Plant, Marshall, Texas

Prepared For

Thiokol Corporation/Longhorn Division
Marshall, Texas

For Submission To

U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Grounds, MD 21010

Prepared By

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INTRODUCTION

The importance of a well-planned, well executed and documented sampling program cannot be overstated. It is the foundation on which the analyses and, ultimately, all decisions are based. Because of this fact, EPS has developed the following document to provide in one book all of the information which should be needed by the field sampling crew to comply with the LHAAP contamination survey Sope of Work and, additionally, to insure a specific predetermined protocol is regorously implemented. This document contains the sampling plan which will be used. Deviation from this plan cannot be accepted except under the most unusual of circumstances and then only with the approval of the FQAC and the proper documentation.

General Sampling Sites and Required Sample and Analytical Categories

The monitoring station locations, parameter coverage, and sampling frequency have been specified by USATHAMA in a manner suitable to meet all objectives of this study. The design has taken into consideration past and existing ambient monitoring programs which may have been conducted, as well as the existing environmental conditions and past history associated with the utilization of the different sampling site locations.

Table 1A provides a list of analytical categories being investigated during this study. Tables 2A-4A provide a brief sampling point description and listing of stations to be sampled and analytical categories to be tested associated with well water, surface water/sediments and soils respectively. Figures 1A-6A provide the general location of well water, surface water/sediment and soil sampling points as well as site specific locations for selected monitoring well sites.

Table 1A

Analytes Determined for the Longhorn
Army Ammunition Plant Survey

Analytical Category	Analyte	Matrix
1	1,3 Dinitrobenzene (1,3 DNB)	All
	2,4,6-Trinitrotoluene (2,4,6 TNT)	All
	1,3,5-Trinitrobenzene (1,3,5,-TNB)	All
	2,4-Dinitrotoluene (2,4 DNT)	All
	2,6-Dinitrotoluene (2,6-DNT)	All
	Nitrobenzene (NB)	All
2	Nitrates	All
	Nitrites	All
	Phosphates	All
	Sulfates	All
	Chloride*	All
	Fluoride*	All
	Chromate*	All
	Thiocyanate*	All
	Acetate*	All
	Cyanide*	All
3	Aluminum	All
	Antimony	All
	Barium	All
	Cadmium	All
	Chromium	All
	Lead	All
	Manganese	All
	Strontium	All
	Mercury*	All
	Copper*	All
	Zinc*	All
	Arsenic*	All
	Beryllium*	All
	Nickel*	All
	Selenium*	All
	Silver*	All
	Thallium*	All
4	GC-MS (Volatiles)	W
	GC-MS (Acid fraction)	All
	GC-MS (Base/neutral fraction)	All
5	HPLC (Screen of general organic compounds)	All
6	GC-EC (Screen for pesticides, organochlorines, PCB's, and related compounds)	All

*Semi-Quantitative Determination
W=Surface/Well water
S = Sediment and Soil

Table 2A

Groundwater Sampling Points and Analytical Requirements

Sample Point	Analytical Category	Approximate Location
101	123456	N Boundary, NW of Plant 2
102	123456	N Boundary, N of Plant 3
103	123456	E of Magazine Area, near Starr Ranch Rd
104	123456	E of Inert Burning Ground
105	123	E of Plant 3, near Independence Ave.
106	1236	NW of Igniter Area
107	12345	E of Static Test Area
108	123456	SSE of Harrison Bayou inlet into Coddo Lake
109	12345	E Boundary, N of Long Point Rd.
110	123456	S Boundary, E of Harrison Bayou
111	123456	SW Boundary, W of Ave. P
112	123456	W Boundary, W of Classification Yard
113	1	NE of TNT Waste Disposal Plant
114	1	WNW of TNT Area, Near 1st Street
115	1	TNT Area, Near Ave K
116	1	NE of TNT Area, Near Ave D
117	1	ENE of TNT Area, Near Ave D and 18th St
118	1	SE of TNT Area, Near 18th St
119	1	SSW of TNT Area, Near 18th St
120	123456	NE of Intersection, Ave P and Ave Q
121	1236	SSW of Current Landfill
122	123456	E of Old Landfill
123	1236	WNW of Burning Ground
124	123456	NNW of Burning Ground
125	123456	NNE of Burning Ground
126	123456	SE of Burning Ground
127	123	WNW of Ground Signal Test Area
128	12345	NE of Ground Signal Test Area
129	12345	SSE of Ground Signal Test Area
130	12345	WNW of South Test Area
131	12345	NE of South Test Area
132	123	SE of South Test Area

Table 2A (Continued)

Sample Point	Analytical Category	Approximate Location	AEHA Desig.
33	123456	Existing 2" well at Current Landfill	BH20
34	123456	Existing 2" well at Current Landfill	BH19
35	1236	Existing 2" well at Current Landfill	BH18
36	1236	Existing 2" well at Old Landfill	BH16
37	123456	Existing 2" well at Old Landfill	BH14
38	123	Existing 2" well at Burning Ground	BH22
39	12345	Existing 2" well at Burning Ground	BH 5
40	123	Existing 2" well at Burning Ground	BH 7
41	123	Existing 2" well at Burning Ground	BH 3
42	123	Existing 2" well at Burning Ground	BH 1
43	12345	Existing 2" well at Burning Ground	BH 8
44	12345	Existing 2" well at Burning Ground	BH 9
45	12345	Existing 2" well at Burning Ground	BH10
46	12345	Existing 2" well at Burning Ground	BH 4
47	12345	Existing 2" well at Burning Ground	BH 2
48	12345	Existing 2" well at Burning Ground	BH 6
49	12345	Existing 2" well at Burning Ground	BH11
50	12345	Existing 2" well at Burning Ground	BH21
51	12345	Existing 2" well at Old Landfill	BH12
52	12345	Existing 2" well at Old Landfill	BH13
53	12345	Existing 2" well at Current Landfill	BH17

TABLE 3A

Surface Water/Sediment Sampling Points and Analytical Requirements

Sample Point	Water Analyses	Sediment Analysis	Approximate Location
001	123456	12345	North Bayou inlet into Caddo Lake
002	123	123	North Bayou, E of Plant 3
003	16	1	North Bayou, W of Plant 3
004	123	-	Foundation of TNT Waste Disposal Plant
005	123	123	Pumphouse Pond in TNT Area
006	1	1	NE of TNT Area
007	1	1	S of TNT Area, Near Avenue N
008	1	1	S of TNT Area, Near Avenue E
009	123456	12345	At W Boundary, S of Admin. Area
010	123	123	Central Creek, E of Avenue P
011	123456	12345	NW of Current Landfill
012	123456	12345	Central Creek Inlet into Caddo Lake
013	123456	12345	Harrison Bayou Inlet into Caddo Lake
014	12345	12345	Rocket Motor Casing Washout Pond
015	123456	12345	NW of Burning Ground
016	12345	12345	NW of Flashing Area
017	123456	12345	E of Old Landfill
018	123	123	Harrison Bayou, S of Avenue Q
019	123456	12345	At S Boundary, Harrison Bayou
020	12345	12345	Saunders Branch inlet into Caddo Lake
021	123	123	Saunders Branch, S of Longpoint Rd.

TABLE 4A

Soil Sampling Points and Analytical Requirements

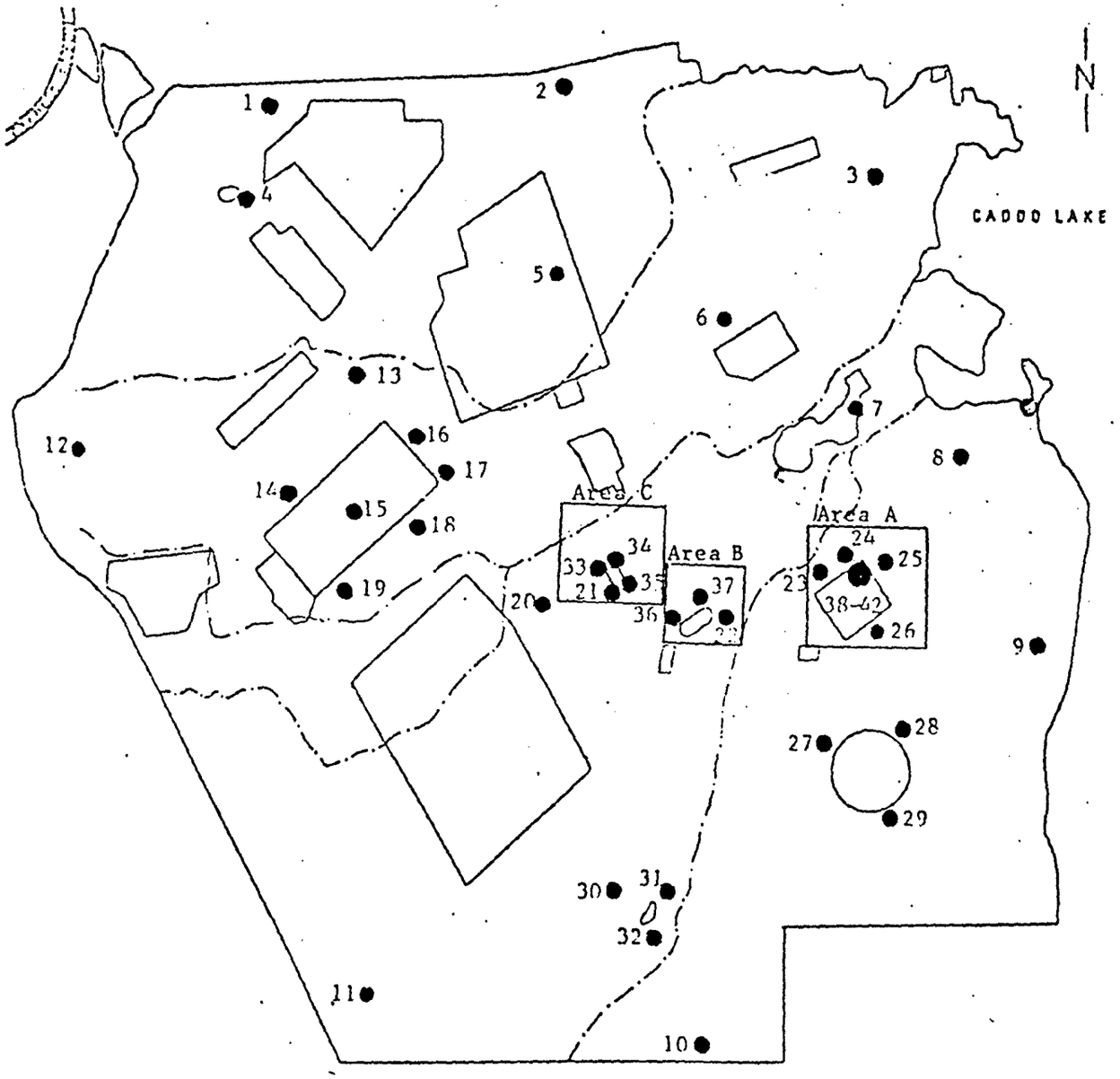
Area #	Sample Type	# Sample Points*	Analytical Category	Area Description
010	1' Cores	3	123(45)**	Inert Burning Ground
020	1' Cores	3	1	TNT Waste Disposal Plant
030	1' Cores	8	1	TNT Area
040	1' Cores	3	123(45)**	South Test Area
050	1' Cores	3	123(45)**	Ground Signal Test Area
060	1' Cores	3	123(45)**	Static Test Area
070	5' Cores	5	123(45)**	Old Landfill
080	5' Cores	3	1	Suspect TNT Burial Site

* Each area will have the number of sample points specified above and identified, for example, as 0101, 0102, and 0103, or 0701T, 0701B, 0702T, 0702B, etc.

** GC/MS and HPLC will be performed only on the composite sample (identified for example as 010C) made up of equal portions taken from each of the sample points in an area. For area 070 a composite sample will be made up of equal portions taken from each of the upper sections of the five-foot cores and one made from the lower sections (identified as 070CT and 070CB, respectively).

FIGURE 1A

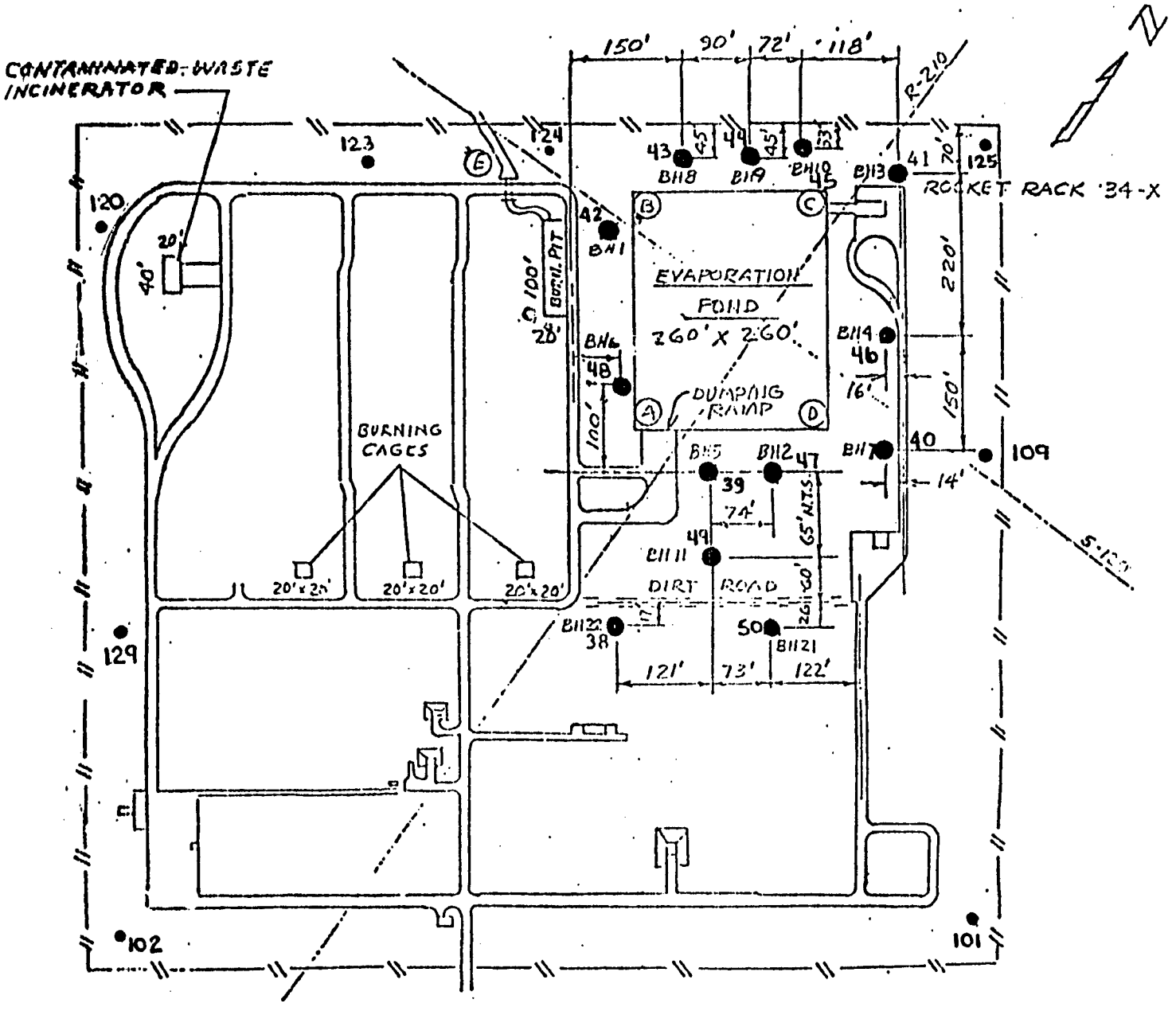
LONGHORN ARMY AMMUNITION PLANT
MONITORING WELL LOCATIONS *



* SPECIFIC LOCATIONS OF EXISTING AEHA WELLS DEPICTED ON FIGURES 4A-6A

FIGURE 4A

LONGHORN ARMY AMMUNITION PLANT
EXISTING AEHA WELLS NEAR EVAPORATION
POND IN THE BURNING GROUNDS



The Preparation and Selection of Specific Sampling Sites

No. 1: Monitoring well sampling site preparation. Upon arrival at the monitoring well sampling site, the upper well casing shall be cleaned using approved water and wiped dry befor unplugging. A clean piece of polyethylene plastic sheet shall be placed on the ground to protect against possible contaminants caused by sampling equipment touching the ground. The height of the water column shall be determined and a calculation done to determine the standing volume of water in the well casing. Five times this calculated volume of standing water shall be removed prior to the extraction of any well water samples for analysis. Table 5A contains a list of standing water heights with associated water volumes for 2" monitoring wells. The purged water shall be bailed out into a calibrated pail in order to determine volume removed. The pail shall be attached via a hook to the existing well protection pipes and the bailing pipe shall be coiled into the pail as the bailer is removed from the well. Before dumping the contents of the pail, the conductivity of the water which has been purged out will be determined. If the well recharge rate is very slow, i.e., six hours or more required to achieve 90% recovery an alternate purging method may be used. This method will involve the bailing of the well twice to remove all standing water, allowing a minimum of 16 hours between the bailing cycles and after the final cycle before the sample is collected. Once the appropriate volume has been bailed from the test well, the well water sample can be collected as outlined in the subsequent section.

No. 2: Surface Water Sampling Site Selection. The surface water sampling sites have been generally located on Figure 2B. The exact location of the surface water sampling sites shall be determined at the time of sampling. The determination shall be jointly agreed to by representatives of EPS and the LHAAP representative. The site should be chosen for their ease of sampling and for their representativeness of the water course under investigation. Attempts should be made to select the site which has relatively calm or slow moving water. Sampling sites

TABLE 5A

Standing Water Volumes in a Two-Inch Monitoring Well

Height of Water Column (ft)	Standing Volume of Water (gal)	Required Purge Volume (gal)
10	1.63	8.15
11	1.79	8.96
12	1.96	9.78
13	2.12	10.50
14	2.28	11.41
15	2.44	12.22
16	2.61	13.04
17	2.77	13.86
18	2.93	14.67
19	3.10	15.48
20	3.26	16.30
21	3.42	17.12
22	3.59	17.93
23	3.75	18.74
24	3.91	19.56
25	4.08	20.38
26	4.24	21.19
27	4.40	22.00
28	4.56	22.82
29	4.72	23.64
30	4.89	24.45
31	5.05	25.26
32	5.22	26.08
33	5.38	26.89
34	5.54	27.71
35	5.70	28.52
36	5.87	29.34
37	6.03	30.15
38	6.19	30.97
39	6.36	31.78
40	6.52	32.60
41	6.68	33.42
42	6.85	34.23
43	7.01	35.04
44	7.17	35.86
45	7.34	36.70
46	7.49	37.49
47	7.66	38.30
48	7.82	39.12
49	7.99	39.94
50	8.15	40.75

should be located, if at all possible, upstream from manmade water course obstructions such as bridges and roadway culverts. Prior to the sampling at any of these points, the contractor will be responsible for providing a means of marking the sampling point to insure that a reoccupation of the sampling site can be accomplished within a reasonable period of time (3/4 iron pipe with Station # inscribed). The contractor will also make a permanent record of these sampling points on an installation map which will be provided by the LHAAP representative.

No. 3. Sediment Sampling Point: The sediment sampling points will be at the same location as the surface water sampling points. The specific selection criteria outlined above takes into consideration the requirements for identification of a specific sampling point for sediment analyses.

No. 4: Soil Sampling Point Selection and Preparation. The general areas of soil sampling have been indicated on Figure 3A. Within each of these areas the exact sampling points remain to be selected. This process will take place by a joint inspection with a representative of EPS, USATHAMA and a representative of LSAAP. The contractor will mark each of the specific five sampling points within each sampling area, which will be sampled for surface soils. The contractor will be responsible for developing a sketch of each area and the location of the representative sampling sites. Prior to the collection of any sample at any one of the points within the eight identified areas, the sampling crew will carefully remove all surface vegetation, rocks, leaves, and other organic debris. An area of approximately four feet square should be prepared in this way in order to insure no contamination from surface organic material.

The Collection of Samples

No. 1: Well Water. After the well has been prepared as outlined above, well water samples can be drawn for the variety of analyses to be conducted. The field sampling crew should consult the LHAAP, groundwater sampling log sheet (Matrix 1) to determine the exact type and number of specific samples which are

required at the particular well being sampled. The log book will indicate the sampling site identification number for each bottle as well as the specific categories being tested and whether or not duplicate samples will be required for this particular station. Each log sheet will contain data on the ground water status and volumes which need to be removed from each well. Prior to filling the bottles both the bottles and their caps will be thoroughly rinsed with the well water being sampled. The field technicians will take every precaution to insure that the sample bottles and well samples are not contaminated by surrounding soil or wind-blown material. After the bottles have been rinsed they are to be filled quickly and capped. In order to insure that no cross contamination takes place during sampling of ground water for the Longhorn Army Amunition Plant Contamination Survey, EPS Laboratories will install a discrete PVC Bailer in each of the 53 monitoring wells. This bailer will pre-cleaned at EPS's Laboratory and will be used only in this pre-designated well site. For those monitoring wells which require modified or protracted bailing operations, the sampling equipment will be temporarily left hanging inside the wells throughout the sampling period.

No. 2: Surface Water Sampling. Surface water samples will be collected directly in the bottles provided for use by EPS. The field sampling technician will wade into the creek or stream at the pre-designated location and will hold the sample bottle upstream from his location at a depth equal to approximately one half of the total depth of the sampling point. Alternately samples may be taken in the sample bottles with a hand held apparatus which can be used from a boat off a bridge. The technician will remove the cap from the bottle and allow the bottle to be filled at the appropriate depth. The first sample taken in each bottle will be discarded and used to rinse the field sampling container. The field sampling technician will repeat this process to collect his field sample. The field sample will be immediately capped after collection. The field sampler will take every precaution to insure that bottom sediments are not disturbed to the point where they are collected

in the water sample. It should be noted that bottom sampling may be taking at the same time as the collection of water samples (immediately after water samples).

No. 3: Sediment Sampling. Sediment samples will be taken at each of the 20 sites listed in Table 3A. The sampling at each station will consist of the collection of at least five (5) two inch cores of surface sediment, which will be taken across the stream profile. These cores will be taken with a one foot long, two inch inside diameter stainless steel coring device with lexan core liners. The cores will be placed in a one gallon glass container. Enough material will be collected to fill a one gallon glass container with sedimentary deposits. The field technician should collect extra cores at various locations across the stream profile in order to insure that one full gallon of sedimentary material is collected at each site. As in the case with water samples, all of the coring devices shall be thoroughly washed with deionized water after the collection of samples from each individual station and the pre-cleaned lexan liner changed to avoid any cross contamination of future sampling sites.

No. 4: Soil Samples. Soil samples will be taken from each of the eight areas indicated in Figure 3A and described on Table 4A. Within each of these eight areas, several discreet one gallon samples will be collected. Each of these discreet samples will be made up of several cores taken in a four foot square area. The samples will be collected with a one foot long, one and one half inch inside diameter stainless steel coring tube or a small hand held auger. Approximately eight to 12 cores will be collected to fill the one gallon bottle in each of the five sampling points associated with each of the eight areas designated in Figure 3A. A total of 31 specific sampling sites will be sampled. The field sampling technicians will be collecting one duplicate sample in every one of the six general sampling areas (as designated in the soil sampling log book Matrix 4). In those cases where duplicate samples are being taken, they should be done simultaneously and every other core removed from the sampling site should be placed in an alternate one gallon sample container. All sampling equipment should be thoroughly rinsed with deionized water between each specific sampling site to avoid any possible cross contamination. At

several locations, five foot deep cores will be taken and these cores split in an upper and lower half to determine the potential location of specific contaminants. This will be accomplished by driving a two inch core one foot into the ground and removing the material for analysis and then by augering down one foot and taking an additional one foot core from this location and so on down to the five foot level. This methodology will elliminate the potential for cross contamination of a single five foot core driven from the surface down to the five foot level.

Treatment in the Field

A great deal of the sample treatment will be accomplished once the samples are received at the analytical laboratory. However, we will review each analytical category being sampled for and any special treatment which is necessary for water samples being taken for each of these samples. Soil Samples will not require any special sampling treatment. Samples being taken for analytical category one and five, which will be analyzed by high performance liquid chromatography (HPLC), will not have any field preservative added to them. These samples will be collected in a one gallon amber bottle. They should be filled to the top of the bottle and sealed as tightly as possible. These samples should be stored from the point of collection at 4 ^{o}C until they are delivered to the laboratory.

Samples being collected for analytical category number two from wells and surface water sites will also not be preserved in the field in any way. These samples will be collected in one quart amber bottles which have been stored with deionized water in them. The deionized water will be poured out, the sample collected and filled to the top of the bottle, and the cap immediately placed on the bottle. These samples will also be stored at 4 ^{o}C until their arrival at the main laboratory.

Samples collected for analytical category number three from well waters will not be preserved in any way. They will be stored at 4 ^{o}C after collection and after arrival at the main

laboratory they will be filtered and then preserved with nitric acid to a pH of less than two.

Samples collected for analytical category number three from surface waters will be preserved in the field, using nitric acid. One half of a millimeter of Ultrix Nitric Acid will be added to each of these samples before they are capped and stored at 4 ^{o}C.

Samples collected for analytical category number four will require the collection of a one gallon water sample as well as a small 40 ml water sample (collected in duplicate). Neither of these two samples will be preserved; however, care should be taken to insure that the 40 ml sample collected in the specially provided vial is filled to the very top and that no air space exist prior to the placement of the vial cap back on the sample. Both the 40 ml sample and the one gallon sample destined for analysis in category four will be stored at 4 ^{o}C.

Samples collected for analytical category number six will require the collection of samples in one gallon amber bottles. Once again these samples will not be preserved in the field; however, they should be stored at 4 ^{o}C prior to reaching the main analytical laboratory.

Labeling and Logging-in of Field Samples

The positive identification of field samples requires that a systematic approach be taken to the labeling and recording of collection data at each specific sampling site. Therefore, a log book system has been developed and incorporated into this document for use during this survey.

There are four specific log books provided, one for each matrix type. These log books are located on the pages listed below.

Matrix/Sampling Site	Log Book Pages
1/Groundwater	30-135
2/Surface Water	136-142
3/Sediments	143-146
4/Soils	147-152

In association with the sampling log books provided, a complete set of stick-on labels and tie-on tags have been prepared for each sample bottle to be collected. These labels are contained within individual packets which have been identified for each station. The field sampling technician should consult the appropriate log book to check on the number and kind of samples to be collected at each site. Once he has collected all of the samples, the bottles should be thoroughly wiped dry, then the packet of labels associated with each sampling site should be removed from its box and each label affixed to the appropriate bottle. Additionally, each tag should be tied or wired to the appropriate bottle as well. The field sampling technician should not leave a particular sampling site until all of the labels provided are attached to the appropriate bottle which now contains the sample. In those cases where duplicate sets of samples are being taken as designated on the field sampling sheets, two packets of labels are provided for the duplicate bottles which will need to be collected. The labels provided in the individual packets have already had the sampling station number, the matrix number, and the analytical category number affixed to them. It will be the responsible of the field sampling technician to put the sampling time and sampling date, as well as checking the appropriate field preparation notes and signing each tag with his initials. Once all of the samples have been collected, labeled, and tagged, the field technician will be responsible for checking the appropriate boxes on the field log book and writing down the date and time of the field sampling and any other pertinent notes in the boxes provided. Once all of the samples have been collected and checked in the manner outlined above, the field sampling technician will initial in the box provided in each line, or on each sheet of the log book. The initialling in this box indicates that all of the samples have been collected and checked and are now ready for storage for ultimate transportation to the laboratory. All of the different size and type bottles used in the collection of field water samples should be placed back into their original shipping containers. Once each container has been filled with bottles, a sample manifest will be prepared as discussed in a subsequent section.

Soil and sediment samples will be labeled and logged in in their respective log books. A complete set of tags has been provided for all soil and sediment samples just as was done with the water samples. In the case of soils and sediment samples, however, only one sample (two samples in case of duplicate stations) will be collected at each site. Although this will be simpler than the water sampling, because of the fact that only one sample will exist from each site, the importance associated with that sample will be much greater for there will be no chance for utilization of alternate samples should a sample be found to be nonexistant. Therefore, upon collection of a particular soil sample, the bottle should be wiped clean and the stick-on label should be affixed immediately. The appropriate information which should be provided by the field technician should be added on to the already partially completed label. Additionally, the tag provided should be wired onto the neck of the bottle in a secure fashion and the same information should be added onto the tag. The appropriate boxes should be checked and filled in on the sediment and soil log book, and once the sample has been labeled and secured, the field sampling technician should sign the particular line of the log book indicating that a complete sample had been taken and identified for future use.

The Preparation of the CDIR Form 13-2.1, 1 September, 1978

The chief of the field sampling crew will be responsible for making an entry on the CDIR Form 13-2.1, 1 September, 1978, for each sample bottle taken during this survey. A copy of this form is included as Figure 7A. In the upper left hand corner of this form there are seven slots under the title of Gang Punch. Slots 1 and 2 should be filled in with the initials LS. Slot 3 and 4 should have the initials SA. Slot 5 should have the initials C. Slot 6 and 7 will vary depending on the type of sample being collected. For our use the following initials will be placed in slots 6 and 7 as is needed:

1. GW -- Groundwater
2. SW -- Surface Water
3. SE -- Sediments
4. SO -- Soils

INSTALLATION RESTORATION

SAMPLING AND ANALYSIS - CHEMICAL

CARD PUNCH

1	3	5	7
INS	FA	T	FIL
	SAC		

1	8	13	16	20	30	34	40	42	48	54	56	58	63	66	70	74	76	78	80
	SAMPLE DATE	SMPL PRGRM	SITE TYPE	SITE IDENTIFICATION	SAMPLE DEPTH	S C	ANALYSIS DATE	LAB	SAMPLE NUMBER	TEST NAME	MTH	MEA BOO	MEA MANTISSA	MEA EXPON	UNITS	ACCUR	PRE	INS TR	ANA-LYST
				SAMPLE									SAMPLE						

INS = INSTALLATION
FA = FUNCTIONAL AREA
T = DATA TYPE
FIL = DATA FILE

SC = SAMPLING TECHN. CODE
MTH = METHOD
MEA = MEASUREMENT
BOO = BOOLEAN

PRE = PRECISION
INSTR = INSTRUMENT
EXPON = EXPONENT
ACCUR = ACCURACY

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FIGURE 7A

Columns number eight through 12 need to be filled in with the Julian date for sample collection. For the purposes of this project, the Julian date will be construed as meaning the numerical day of the year preceded by the year date. Therefore, January 1, 1982, will be 82001 and November 16, 1982, will be 82320. Columns 13-15 should be filled in with the initials PRI (Preliminary Sruvey Phase I). Column 16-19 should be filled in with the site type which will be a four letter abbreviation for the particular types of areas to be sampled and will provide you with the following list which may be used during the study:

1. Creek -- (CREK)
2. Ditch or Drainage -- (DTCH)
3. Lake -- (LAKE)
4. Pond -- (POND)
5. River -- (RVER)
6. Spring -- (SPRG)
7. Stream -- (STRM)
8. Standing Water -- (STWA)
9. Sump -- (SUMP)
10. Soil Surface -- (SURF)
11. Well -- (WELL)

Columns 20-29 should be filled in with the site identification which should be left justified and should be listed as LHAAP and the Station number. Sampling depth should be listed in centimeters in columns 30-33. The sample technicque should be listed in column 34 and the following is a list of letters which will be used for the types of sample which will be conducted:

B = Bailer
G = Single graph sampler
T = Tube core sampling

Columns number 35-39 should be left blank by the field sampling crew as well as columns 40 and 41. Columns number 42-47 should be filled in with the sample number code on each label. The code will consist of the sample number up to three digits, a one digit matrix code, and a one digit category code. The rest of the CDIR form can be left blank until a later date.

The Preparation of a Sample Manifest

After samples have been collected and logged in and the CDIR Form 13-2.1 has been completed, the samples should be placed in their shipping cases for transport to EPS Laboratory. This process should take place at the sample collection site if at all possible, and as different types of samples are placed back into their respective cases, certain specific information about each of them needs to be recorded on the sample manifest form . A copy of this sample manifest has been included as Figure 8A of this document. The chief field sampling technician will log each sample bottle in; he will write in the site number, matrix code and analytical code (these three pieces of information make up the sample identification). He will also put the date and time of the log-in down and he will then put the number of the shipping case in its appropriate spot and also include any notes about the sample condition or any other pertinent information. Once all of this information has been logged in;, the chief sampling technician will initial the second to the last column on the manifest indicating that the sample has been secured in an appropriate case and has been logged in for shipment. The sample manifest has been designed to hold information on 20 discreet samples and, in many cases, this will mean that one manifest will hold information about bottles contained in up to five different shipping cases. The manifest will be maintained by the chief of the field sampling crew and will be transmitted along with the samples at the time of shipping to the laboratory facility.

LONGHORN AAP, CONTAMINATION SURVEY SAMPLE SHIPPING AND TRANSFER MANIFEST

(Sheet___of___)

ITEM NO.	SAMPLE I.D.			LOG IN		NOTES	SHIPPING CASE NO.	SAMPLES LOGGED IN BY	
	SITE	MATRIX	ANAL. CODE	DATE	TIME			(Field)	(Lab)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Figure 8A

Maintenance of Chain of Custody of Samples

The chief of the field sampling crew will be responsible for the maintenance of a clear chain of custody of each of the samples taken during the LHAAP Contamination Survey. The field sampling crew chief will see that once samples are logged in on the manifest and in the sample collection book that they are secured in a location which only he has direct access to (an example of this would be a locked refrigeration unit, room or a locked and refrigerated vehicle). The samples should be maintained either in direct site of the field sampling chief or under a locked condition until such time as they are transfered to an employee of EPS to transport the samples to the designated EPS laboratory. On the back of each sample manifest sheet is a certification statement which will allow for the documentable transfer of samples from the custody of the chief of the field sampling crew to the individual assigned with the responsibility of transporting the samples to the analytical laboratory. The appropriate information needs to be commpleted on each manifest at the time of transference of the samples for transport. An example of the certification statement for transference of samples is included as Figure 9A.

Transportation of Samples to the Laboratory

Water samples will be transported to EPS under refrigeration either using large insolated ice chest or a refrigerated truck. Samples which are destine for analysis in the laboratory should be transported as soon as possible to limit the holding time for those analytes particularly prone to degradation after collection. All water and soil samples collected should be maintained at approximately 4 ^{o}C until they are received at EPS's Jackson and Pensacola facilities.

Figure 9A

CERTIFICATIONS:

Field technician checked samples against collection log books:

_____ _____
Name Date

Samples transfered to _____
Name

by _____ on _____
Name Date

_____ for transport to EPS Lab. Samples delivered to
Time

EPS Lab on _____ by _____
Date Name

Received by _____ _____
Name Time

Samples checked against manifest and certified in order by

_____ _____ _____
Name Date Time

COMMENTS

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

The Transference of Sample Custody

The sample custody transference document has been incorporated into the certification statement on the back of each manifest sheet. See Figure 9A. At the time samples are delivered to EPS's Jackson and Pensacola facility, they will be checked in by the FQAC and he will initial each line indicating that each sample has been received. Additionally, he will sign the certification document in the appropriate spot certifying the receipt, time and date.

LOG BOOK 1

GROUNDWATER

LONGHORN AAP GROUNDWATER SAMPLING LOG SHEET
(MATRIX 1)

PART I: WELL NO. _____ (STATION)

Date: _____ Time: _____ (Hours)

Established *Depth to Bottom of Well _____(ft) - *Distance to Top of Water _____(ft)

= Length of Water Column _____(ft) X Ø.815 =

Volume To Be Removed Before Sampling _____

- -

PART II: Water Removal Begun: Date: _____ Time: _____(Hrs.)

Volume of Water Removed: _____(gal) Sampler: _____

Conductivity _____(umho's)

Well Dry or Removal Complete Time: _____(hours)

Remaining Volume To Be Bailed (if any) _____(gal)

If Volume of Water Removed Equals That Required, Proceed to Part IV.

- -

PART III: After at Least 16 Hours From First Attempt to Purge Well, Proceed to Bail Well and Remove Remaining Required Volume.

Date: _____ Time: _____(Hours) Sampler_____

*Distance to Top of Water: _____(ft)

Volume of Water Removed _____ + Previous Volume Removed

_____ = _____
Total Volume Removed

Conductivity _____(umho's)

If Total Volume Removed Is Equal to Required Removal Volume, Proceed Immediately to Part IV. If Not, Wait Sixteen Hours-then proceed with Part IV.

- -

(CONTINUED ON BACK)

LOG BOOK 2

SURFACEWATER

LHAAP, SURFACEWATER SAMPLING

Sample Point	Description of Site	Explosive Comp. Quantitative Analysis & Gen Org HPLC Screen (Analytical Category 1 & 5)		Anion Quantitative Analysis & Screening (Analytical Category No. 2)		Metal Quantitative Analysis & Screening (Analytical Category No. 3)	
		Sample 1 Gal. Amber Bt	Dup. Sample 1 Gal Amb Bt	Sample 1 Qt. Amber Bt	Dup. Sample 1 Qt Amber Bt	Sample 1 Qt. Amber Bt	Dup. Sample 1 Qt. Amber Bt
001		ID 001-2-1&5	ID 001-2-1&5	ID 001-2-2	ID 001-2-2	ID 001-2-3	ID 001-2-3
002		ID 002-2-1		ID 002-2-2		ID 002-2-3	
003		ID 003-2-1					
004		ID 004-2-1		ID 004-2-2		ID 004-2-3	
005		ID 005-2-1		ID 005-2-2		ID 005-2-3	
006		ID 006-2-1					
007		ID 007-2-1					
008		ID 008-2-1					

LOG SHEET (MATRIX 2)

GC/MS Organic Screening Analysis (Analytical Category No. 4)				GC/EC Pesticides & Related Compounds Screening Analysis (Analytical Category No. 6)		Sampl. Date and Time	Sampler's Notes and Initials
Sample 1 Gal Amb Bt	Dup. Sample 1 Gal Amb Bt	40 ml Sample Vial/2 ea	40 ml Dup. Vial/2 ea	Sample 1 Gal Amber Bt	Dup. Sample 1 Gal Amber Bt		
ID 001-2-4	ID 001-2-4	ID 001-2-4V	ID 001-2-4V	ID 001-2-6	ID 001-2-6		

LHAAP, SURFACEWATER SAMPLING

Sample Point	Description of Site	Expl. Comp. Quantitative Analysis & Gen Org HPLC SCR (Analytical Category 1 & 5)		Anion Quantitative Analysis & Screening (Analytical Category No. 2)		Metal Quantitative Analysis & Screening (Analytical Category No. 3)	
		Sample 1 Gal. Amb Bt	Dup. Sample 1 Gal Amb Bt	Sample 1 Qt Amb Bt	Dup. Sample 1 Qt Amb Bt	Sample 1 Qt Amb Bt	Dup. Sample 1 Qt Amb Bt
009		ID 009-2-1&5		ID 009-2-2		ID-009-2-3	
010		ID 010-2-1		ID 010-2-2		ID 010-2-3	
011		ID 011-2-1&5		ID 011-2-2		ID 011-2-3	
012		ID 012-2-1&5	ID 012-2-1&5	ID 012-2-2	ID 012-2-2	ID 012-2-3	ID 012-2-3
013		ID 013-2-1&5		ID 013-2-2		ID 013-2-3	
014		ID 014-2-1&5		ID 014-2-2		ID 014-2-3	
015		ID 015-2-1&5		ID 015-2-2		ID 015-2-3	
016		ID 016-2-1&5		ID 016-2-2		ID 016-2-3	

LOG SHEET (MATRIX 2)

GC/MS ORGANIC SCREENING ANALYSIS (Analytical Category No. 4)				GC/EC PESTICIDES & RELATED Compounds Screening Analysis (Analytical Category No. 6)		Sampl. Date and Time	Sampler's Notes and Initials
Sample 1 Gal Amb Bt	Dup. Sample 1 Ga Am Bt	40 ml Sample Vial/2ea	40 ml Dup. Vial/2ea	Sample 1 Gal Amber Bt	Dup. Sample 1 Gal Amber Bt		
ID009-2-4		ID009-2-4V		ID009-2-6			
ID011-2-4		ID011-2-4V		ID011-2-6			
ID012-2-4	ID012-2-4	ID012-2-4V	ID012-2-4	ID012-2-6	ID012-2-6		
ID013-2-4		ID013-2-4V		ID013-2-6			
ID014-2-4		ID014-2-4V					
ID015-2-4		ID015-2-4V		ID015-2-6			
ID-16-2-4		ID016-2-4V					

Sample Point	Description of Site	Explosive Comp. Quantitative Analysis & Gen Org HPLC Screen (Analytical Category 1 & 5)		Anion Quantitative Analysis & Screening (Analytical Category No. 2)		Metal Quantitative Analysis & Screening (Analytical Category No. 3)	
		Sample 1 Gal Amb Bt.	Dup. Sample 1 Gal Amb Bt	Sample 1 Qt Amb Bt	Dup. Sample 1 Qt Amb Bt	Sample 1 Qt Amb Bt	Dup. Sample 1 Qt Amb Bt
017		ID017-2-1&5		ID017-2-2		ID017-2-3	
018		ID018-2-1		ID018-2-2		ID018-2-3	
019		ID019-2-1&5		ID019-2-2		ID019-2-2	
020		ID020-2-1&5	ID020-2-1&5	ID020-2-2	ID020-2-2	ID020-2-3	ID020-2-3
021		ID021-2-1		ID021-2-2		ID021-2-3	

LOG SHEET (MATRIX 2)

GC/MS Organic Screening Analysis (Analytical Category No. 4)				GC/EC Pesticides & Related Compounds Screening Analysis (Analytical Category No. 6)		Sampl. Date and Time	Sampler's Notes and Initials
Sample 1 Gal Amb Bt	Dup. Sample 1 Gal Amb Bt	40 ml Samp. Vial/2ea	40 ml Dup. Vial/2ea	Sample 1 Gal Amb Bt	Dup. Sample 1 Gal Amb Bt		
ID017-2-4		ID017-2-4V		ID017-2-6			
ID019-2-4		ID019-2-4V		ID019-2-6			
ID020-2-4	ID020-2-4	ID020-2-4V	ID020-2-4V				

LOG BOOK 3

SEDIMENTS

LHAAP, SEDIMENT SAMPLING LOG SHEET (MATRIX 3)

Sampl.	Description of Site	Sediment Sample for Uses in all Analytical Categories		Sampl.	Sampler's Notes and Initials
		Sample 1 Gal. Clear Jar	Dup. Sample 1 Gal. Clear Jar		
001		ID001-3-A11 _____	ID001-3-A11 _____		
002		ID002-3-A11 _____			
003		ID003-3-A11			
005		ID005-3-A11 _____			
006		ID006-3-A11 _____			
007		ID007-3-A11 _____			
008		ID008-3-A11 _____			
009		ID009-3-A11 _____			

LHAAP, SEDIMENT SAMPLING LOG SHEET (MATRIX 3)

Sampl Point	Description of Site	Sediment Sample for Uses in all Analytical Categories		Sampl. Date and Time	Sampler's Notes and Initials
		Sample 1 Gal Clear Jar	Dup. Sample 1 Gal Clear Jar		
010		ID010-3-A11 _____			
011		ID011-3-A11 _____	ID 011-3-A11		
012		ID012-3-A11 _____			
013		ID013-3-A11_____			
014		ID014-3-A11_____			
015		ID015-3-A11_____			
016		ID016-3-A11 _____			
017		ID017-3-A11_____			

LHAAP, SEDIMENT SAMPLING LOG SHEET (MATRIX 3)

Samp. Point	Description of Site	Sediment Sample for Uses in all Analytical Categories		Sampl. Date and Time	Sampler's Notes and Initials
		Sample 1 Gal. Clear Jar	Dup. Sample 1 Gal. Clear Jar		
018		ID018-3-A11 _____			
019		ID019-3-A11 _____	ID 019-3-A11 _____		
020		ID020-3-A11 _____			
021		ID021-3-A11 _____			

LOG BOOK 4

SOILS

LHAAP, SOIL SAMPLING LOG SHEET (MATRIX 4)

Sample Point	Description of Site	Soil Sample for Uses in all Analytical Categories		Samp. Date and Time	Sampler's Notes and Initials
		Sample 1 Gal. Clear Jar	Dup. Sample 1 Gal. Clear Jar		
0101		ID 0101-4-All_____			
0102		ID 0102-4-All_____			
0103		ID 0103-4-All_____			
0201		ID 0201-4-All_____			
0202		ID 0202-4-All_____			
0203		ID 0203-4-All_____			
0301		ID 0301-4-All_____			
0302		ID 0302-4-All_____			

LHAAP, SOIL SAMPLING LOG SHEET (MATRIX 4)

Sample Point	Description of Site	Soil Sample for Uses in all Analytical Categories		Sampl. Date and Time	Sampler's Notes and Initials
		Sample 1 Gal. Clear Jar	Dup. Sample 1 Gal. Clear Jar		
0303		ID 0303-4-All _____			
0304		ID 0304-4-All _____			
0305		ID 0305-4-All _____			
0306		ID 0306-4-All _____			
0307		ID 0307-4-All _____			
0308		ID 0308-4-All _____			
0401		ID 0401-4-All _____	ID 0401-4-All _____		
0402		ID 0402-4-All _____			

Sample Point	Description of Site	Soil Sample for Uses in all Analytical Categories		Sampl. Date and Time	Sampler's Notes and Initials
		Sample 1 Gal. Clear Jar	Dup. Sample 1 Gal. Clear Jar		
0403		ID 0403-4-All _____			
0501		ID 0501-4-All _____	ID 0501-4-All _____		
0502		ID 0502-4-All _____			
0503		ID 0503-4-All _____			
0601		ID 0601-4-All _____			
0602		ID 0602-4-All _____			
0603		ID 0603-4-All _____			
0701T		ID 0701T-4-All _____			

Sample Point	Description of Site	Soil Sample for Uses in all Analytical Categories		Sampl. Date and Time	Sampler's Notes and Initials
		Sample 1 Gal. Clear Jar	Dup. Sample 1 Gal. Clear Jar		
0701B		ID 0701B-4-A11 _____			
0702T		ID 0702T-4-A11 _____			
0702B		ID 0702B-4-A11 _____			
0703T		ID 0703T-4-A11 _____			
0703B		ID 0703B-4-A11 _____			
0704T		ID 0704T-4-A11 _____			
0705B		ID 0705B-4-A11 _____	ID 0705B-4-A11 _____		
0801T		ID 0801T-4-A11 _____			

Sample Point	Description of Site	Soil Sample for Uses in all Analytical Categories		Sampl. Date and Time	Sampler's Notes and Initials
		Sample 1 Gal. Clear Jar	Sample 1 Gal. Clear Jar		
0801B		ID 0801B-4-All _____			
0802T		ID 0802T-4-All _____			
0802B		ID 0802B-4-All _____			
0803T		ID 0803T-4-All _____			
0803B		ID 0803B-4-All _____			